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ABSTRACT

This document contains course outlines for a professional curriculum in aquatics at the college and university level, endorsed by the National Symposium on Professional Preparation in Aquatics Education. The proposed curriculum is divided into four areas of professional standards: (a) the physical educator, (b) the aquatics instructor, (c) the aquatics specialist, and (d) the aquatics administrator. Professional standards for the aquatics instructor are further divided into 10 specialties: (a) swimming, (b) springboard diving, (c) handicapped, (d) skin and scuba diving, (e) small craft and open water activity, (f) competitive swimming, (g) synchronized swimming, (h) water polo, (i) lifeguarding, and (j) aquatics facilities management. Included in the outlines are course descriptions, objectives, course content, procedures and methods, and a bibliography. (PD)

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PROFESSIONAL PREPARATION IN AQUATICS EDUCATION -- CURRICULUM GUIDELINES

SP 008 099

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FOREWORD

In the past four years the Aquatics Council of the General Division of AAHPER has probably done more to upgrade itself as a professional council of AAHPER than has any other sub-division. Among the Council's many accomplishments was the sponsoring of three national assemblies.

In February 1970, the Aquatics Council sponsored the First National Aquatics Conference on Professional Standards in Washington, D. C., to explore the professional preparation of aquatics personnel. This was the first time aquatics enthusiasts had converged on such a large scale to explore a common problem of national importance. The conference was a great success; however, the leaders realized it was only the beginning and that future conferences must be held to polish the results of the Washington conference and explore other matters germane to the aquatics educator.

In October 1971, the Second National Aquatics Conference on Professional Standards was held in Long Beach, California. Its purpose was to refine and expand the professional standards established during the Washington conference and to explore approaches to certification of aquatics personnel. The conference was an overwhelming success and paved the way for a third national gathering of leaders in aquatics education.

After one year of planning, the National Symposium on Professional Preparation in Aquatics Education took place in Minneapolis, Minnesota, on April 12, 1973. Its purpose was to review and endorse materials to serve as guidelines for a professional curriculum in aquatics at the college and university level, based on standards determined at the Washington and Long Beach conferences.

The 71 symposium participants were a truly representative group of aquatics leaders. They journeyed from 25 states, the District of Columbia, Canada and the Virgin Islands. Fifty-four participants represented institutions of higher education. The remaining 17 represented public schools, the American Red Cross, the YMCA, the CNCA, the Girl Scouts, the AAU, a Department of Education (Virgin Islands), special schools for the handicapped, and city recreation departments. Minnesota had the largest delegation with 14; Massachusetts was second with 7; Illinois and Pennsylvania each had 5; California and New York each had 4 aquatics representatives present.

The proposed curriculum is divided into four areas: 1) professional standards for the physical educator, 2) for the aquatics instructor, 3) for the aquatics specialist, and 4) for the aquatics administrator. Professional standards for the aquatics instructor is further divided into ten specialties: swimming, springboard diving, handicapped, skin and SCUBA diving, small craft and open water activity, competitive swimming, synchronized swimming, water polo, lifeguarding, and aquatics facilities management.

Dedicated committees composed of the nation's outstanding leaders in all phases of aquatics education made the National Symposium an overwhelming success and completed another important step toward unifying, strengthening and improving the aquatics profession.

During the one-day symposium course outlines prepared by each committee were presented to the symposium council of official delegates for response, revision and endorsement.

This document contains the endorsed course outlines establishing a professional curriculum in aquatics at the college and university level.

John L. Cramer, University of San Diego
Symposium Editor

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PROFESSIONAL STANDARDS FOR THE PHYSICAL EDUCATOR

Professional Standards for the Physical Educator

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DON D. ROBINSON, pool director, Mankato State College, Mankato,
Minnesota
BARBARA YAGER (chairman), professor, University of Northern
Iowa, Cedar Falls

I. Introduction
  A. Rationale
    1. All physical education majors should have personal experience and professional instruction in swimming as part of their professional preparation.
      a. Aquatics offers a medium in which unique human movement patterns occur.
      b. The scope of aquatics is increasing; programs are increasing in number, variety and depth. There is a need for professional undertaking and basic knowledge of aquatics activities.
      c. A physical educator with personal safety skills and knowledge of safe practices can make a professional contribution to the development of safe aquatics programs.
    2. Students should be strongly encouraged to continue to advance their level of skill and broaden their participation in aquatics.
    3. The intent of the following curriculum is to provide a basic exposure to aquatics. Students are not qualified to assume a position of responsibility for any phase of an aquatics program unless they have acceptable certification, such as Water Safety Instructor (WSI).

B. Guidelines for implementation
   1. It is recognized that professional programs will differ in structure and requirements, and that implementation might be handled best by other means (i. e., exemption testing, modular scheduling, lab experiences in conjunction with core courses, credit for experience, etc.).
   2. Skills and knowledges presented should be achieved by all physical education majors.
   3. Evaluation of the performance and skill potential of the individual should be made by the aquatics faculty.
   4. Aquatics faculty should take responsibility for the integration of aquatics knowledges and concepts with other professional preparation courses, such as kinesiology, introduction to physical education, organization and administration, principles, physiology of exercise, measurement.

II. Standards for All Physical Educators
   A. Basic skills and experiences
      1. Breath control
         a. Alternate breathing
         b. Proper stroke breathing
         c. Surface diving
         d. Underwater swimming
      2. Body control
         a. Prone, supine, side, inverted, rotation
         b. Changing directions and positions
      3. Buoyancy control and personal flotation devices
         a. Survival floating
         b. Clothing inflation
         c. Use of life jackets, buoyant cushions
      4. Finning and sculling
      5. Stroke performance
         a. Technique (20-25 yards each of four of the following six strokes, one of which must be on the back)
            1) Back crawl
            2) Breast stroke
            3) Butterfly
            4) Elementary backstroke
            5) Front crawl
            6) Side stroke
         b. Endurance (five minute continuous swim)
      6. Surface dive (eight foot depth)
      7. Underwater swim (three body lengths)
      8. Treading water (three minutes)

9. Entries (front header, feet first)
10. Safety skills
    a. Personal safety
        1) When to swim
        2) Where to swim
        3) Healthful conditions for safe aquatics activities
    b. Self-rescue
    c. Meeting emergencies
        1) Non-swimming rescue
        2) Elementary forms of rescue
        3) Mouth-to-mouth resuscitation
        4) Cardiopulmonary resuscitation (CPR)

B. Basic knowledges and understandings
    1. Stroke techniques (six basic strokes)
        a. Leg action
        b. Arm movement
        c. Breathing
        d. Coordination
    2. Biomechanical principles of movement in the water
        a. Resistance factors
        b. Physiological considerations
    3. Small craft safety (if appropriate)
        a. Canoeing
            1) Capsizing
            2) Re-entry
            3) Hand paddling
            4) Rescue methods
        b. Boating (sailing, if appropriate)
            1) State regulations
            2) Responsibilities of boat operation
            3) Load capacity
            4) Safety equipment
    4. Health factors
        a. Basic health procedures, rules and laws for a pool
        b. Basic health procedures, rules and laws for a waterfront
    5. Safety procedures and equipment
        a. Pool
        b. Lake or ocean beach
    6. Emergency procedures and equipment
        a. Near drowning
        b. Heat exhaustion or unconsciousness
        c. Cuts, bruises, broken bones

7. Scope of the aquatics field
    a. Aquatics programs
        1) Competitive swimming
        2) Water polo
        3) Synchronized swimming (aquatic art)
        4) Fitness and conditioning
    b. Less organized and adapted games for the water
    c. Career and employment opportunities
    d. School, camp and community programs
    e. Resource information

III. Procedures and Methods
- A. Students should be helped to focus on the teaching as well as the learning of skill.
- B. The procedures and methods unique to aquatics teaching should be brought to the attention of the students.
- C. Reasons for skill classification should be stressed.
- D. Similarities and differences between learning situations in aquatics and in other sports activities should be identified.
- E. Print and non-print media should be utilized.
- F. The course content and skill objectives are minimums.
- G. Sponsoring institutions should adjust the content in order to offer experiences with as much depth and breadth as possible within the curricular framework.
- H. Evaluations should be made of skills and knowledges.
- I. The overall evaluation should be determined by the objectives and focus of instruction.

IV. Bibliography

A. Books

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PROFESSIONAL STANDARDS FOR THE AQUATICS INSTRUCTOR

9/10

General Standards for the Aquatics Instructor

ROBERT D. CLAYTON (chairman), coordinator of physical education,
Mankato State College, Mankato, Minnesota
LOU MacNEIL, aquatics director, Pennsylvania State University,
University Park

I. Introduction
  A. All aquatics instructors, regardless of specialty area, should possess the following basic skills, knowledges, and understandings:
    1. Advanced swimming ability
    2. Aquatics safety skills
    3. Basic principles of motor learning
    4. Effective teaching approaches and teacher behavior
  B. Recommended skills, knowledges, and understandings may be obtained through specialized courses, series, or lab experiences in conjunction with other courses.
  C. Recommended standards may be satisfied through specific skill and knowledge tests.

II. Standards for All Instructors
  A. Basic swimming skills
    1. Standard--perform each skill with no major performance error
    2. Skills to be performed
      a. Elementary backstroke
      b. Side stroke
      c. Breast stroke
      d. Crawl stroke

    e. Sculling and finning
    f. Bobbing (hands, no hands)
    g. Treading water (hands alone, feet alone)
    h. Surface diving (tuck, pike, feet first)
    i. Underwater swimming
    j. Reaching assist, extension assist
    k. Drownproofing (survival floating)
    l. Dive from deck (lead-up progression)
B. Aquatics safety skills
  1. Standards
    a. Score 75% or more on a written test encompassing knowledges and understandings of basic aquatics safety needs
    b. Perform certain resuscitation skills related to aquatics safety needs
  2. Knowledges, understandings, and skills
    a. Mouth-to-mouth resuscitation
    b. Cardiopulmonary resuscitation
    c. One method of manual resuscitation
    d. Use of spine board
    e. Definitions and examples related to legal liability (negligence, contributory negligence, attractive nuisance, assumption of risk, tort, acts of commission, acts of omission)
    f. Information required for accident report form
    g. Personal skills needed by a lifeguard or instructor (emotional maturity, desirable attitudes, physical strength and endurance, technical skills and knowledge, dependability, judgment and tact)
    h. Technical skills needed by a lifeguard or instructor (reaching assists, rescue with equipment, water rescue, boat rescues, first aid, spine boards)
    i. Pool and beach security
C. Basic principles of motor learning
  1. Standards
    a. Score 75% or more on a written test encompassing knowledges and understandings of basic motor learning principles and their special use in aquatics
    b. Demonstrate application of the above knowledges and understandings in a practical situation
  2. Knowledges and understandings
    a. Motivation and fear as factors in learning
    b. Reward and punishment
    c. Neurological relationships in teaching aquatics

        d. Basic laws of motion, levers, buoyancy
        e. Drill
        f. Whole-part-progressive-part learning
        g. Mass-distributed practice
        h. Mental practice
        i. Retention
        j. Transfer
    D. Teaching approaches and teacher behavior
        1. Standards
            a. Score 75% or more on a written test encompassing knowledges and understandings of various approaches and behaviors used by successful teachers
            b. Demonstrate the application of these knowledges and understandings in a practical situation
        2. Knowledges and understandings
            a. Progression
            b. Grouping
            c. Lesson plans
            d. Demonstrations
            e. Land drill
            f. Audiovisual aids
            g. Basic practice formations
            h. Problem solving
            i. Evaluation (student, instructor, course)

III. Bibliography

A. Books

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2. American National Red Cross. Swimming and Water Safety. Washington, D.C.: ARC, 1968.
3. Armbruster, David A. et al. Swimming and Diving. St. Louis: C. V. Mosby Co., 1973.
4. Harris, Marjorie. Basic Swimming Analyzed. Boston: Allyn & Bacon, 1969.
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6. Silvia, Charles E. Manual and Lesson Plans for Basic Swimming, Water Stunts, Lifesaving, Springboard Diving, Skin and SCUBA Diving, Methods of Teaching. Springfield, Mass.: the author, 1970.
7. Torney, John A., Jr. and Clayton, Robert D. Aquatic Instruction: Coaching and Management. Minneapolis: Burgess Publishing Co., 1970.

B. Document

1. Buck, Margaret; Clayton, Robert; and Cramer, John L., eds. Position paper, Professional standards for aquatic instruction. Based on material from Second National Aquatics Conference, Long Beach, Calif., 1971.

Instructor of Swimming

JEAN APPENZELLAR, associate professor, Vassar College, Poughkeepsie, New York
MARGARET BUCK (chairman), professor, Mankato State College, Mankato, Minnesota
JAN J. GUND, chairman of physical education, Mills Township High School, Skokie, Illinois

I. Course
  A. Number: (varies with institution)
  B. Title: Instructor of Swimming
  C. Credits: 3 semester or 4 quarter (suggested)
  D. Terms Offered: each term
  E. Catalog Description: Designed to prepare the student to teach beginning swimming through lifesaving to preschool through adult groups.
  F. Prerequisites
    1. Hold Senior Lifesaving Certification (ARC, YMCA or equivalent)
    2. Satisfy professional standards for the aquatics instructor (pages 11-13)
    3. Perform the following skills at the advanced level
      a. Strokes
        1) Front crawl
        2) Back crawl
        3) Side stroke
        4) Elementary back
        5) Breast stroke

        b. Diving
            1) Standing front dive
            2) Front dive with approach from the low board
    4. Know and perform satisfactorily the overarm side stroke, trudgen, trudgen crawl, inverted breast stroke and butterfly
    5. Demonstrate a minimum standard of endurance and speed by swimming 500 yards in 9 1/2 minutes (men) or 11 1/2 minutes (women)

II. Objectives
- A. Broad objective
    - 1. Prepare the student fully to teach beginning, intermediate and advanced swimming to individuals of all ages
- B. Specific objectives
    - 1. Develop understanding of fundamental anatomical, physiological, and mechanical principles involved in swimming
    - 2. Provide opportunity to maintain skills in emergency procedures and lifesaving techniques in order to protect a class safely
    - 3. Provide additional opportunity to perfect swimming and diving skills
    - 4. Provide information about a wide variety of effective teaching methods, progressions and practice drills
    - 5. Acquaint student with newest instructional aids and materials
    - 6. Provide opportunity to experiment with new methods and materials which are used effectively in swimming instruction
    - 7. Provide opportunity to learn to communicate with swimmers
    - 8. Provide opportunity for practice in analyzing and correcting swimming techniques
    - 9. Present material related to development of programs suited to needs of agencies, organizations, schools, camps and community recreation centers
    - 10. Provide opportunity for continuing experiences in teaching swimming

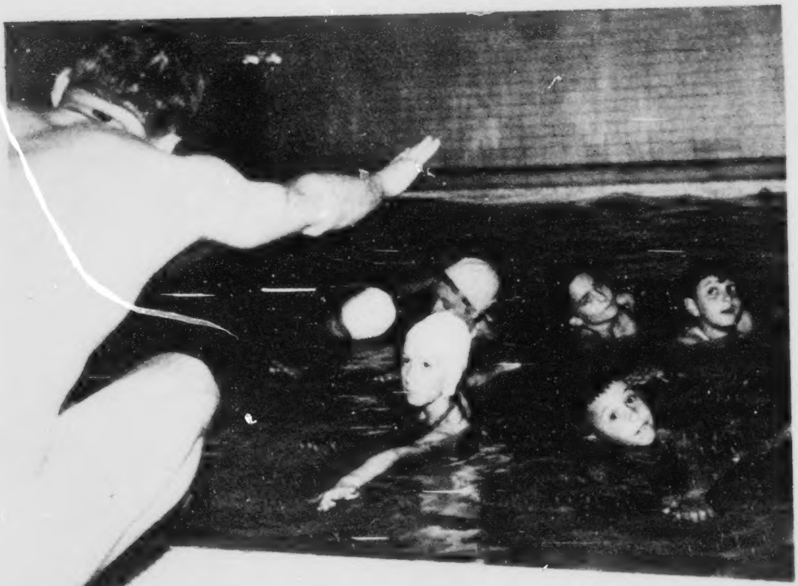
III. Course Content
- A. Demonstrate, analyze and teach the following skills
    - 1. Beginning swimmer skills
        - a. Rhythmic breathing and bobbing
        - b. Tuck, prone, supine and vertical floats
        - c. Body positions for strokes and glides
        - d. Crawl kicks, breaststroke and inverted breaststroke kick (whip or wedge), scissors kick

e. Arm strokes (front crawl, side finning, and elementary back)
f. Drownproofing
g. Treading
h. Water entries, feet first and diving
i. Porpoise dive and tuck surface dives
j. Change of direction and change of position in the water
k. Entry into water, swimming thirty feet, change of direction, change of position and return to starting position
l. Safety skills
  1) Use of life jacket
  2) Release of cramps
  3) Relieving assists
  4) Mouth-to-mouth resuscitation

2. Intermediate and advanced skills

Note: These could be introduced at either level depending on the structure of the program. At either level, skills should be done with no major performance errors. Distance could be increased or time of swimming decreased as the swimmer advances.

a. Front crawl
b. Elementary back stroke
c. Side stroke (regular scissors and inverted scissors kicks), both sides
d. Overarm side stroke (both sides)
e. Breaststroke and inverted breaststroke (whip and wedge kicks)
f. Back crawl
g. Butterfly
h. Trudgen
i. Trudgen crawl
j. Double trudgen
k. Swimming turns (prone, back and side open turns, prone and back, tumble turns)
l. Surface dives (tuck, pike, and feet first)
m. Racing starts
n. Diving-standing front dive, running front dive, standing back dive
o. Continuous swimming 200-500 yards in decreasing times
p. Personal safety skills, floating, treading, use of flotation devices, clothing and simple rescue equipment for survival



B. Analysis of performance of each of the skills
   1. The model or ideal performance
      a. Kinesiological analysis, including anatomical and mechanical
      b. Physiological aspects, such as breath control, conditioning, susceptibility to cramps, problems with function of ears, eyes, and respiratory system
   2. The inferior or inadequate performance
      a. Evaluation and measurement (the valid and reliable measures presently used)
      b. Identification and correction of errors
C. Background for teaching
   1. Understanding the concept of fear of the water; updating on successful methods for teaching the fearful individual (preschooler through adult)
   2. Practice devices emphasizing perceptual-motor learning
      a. Practice drills--water, land and mental
      b. Visual aids demonstrations, charts, films, video tape
      c. Listening to explanations, and cues, imagery
      d. Kinesthetic cues in performance related to pressure, balance, body position, patterns and speed of movement
   3. Contributions of research to teaching
      a. Current completed research in teaching of swimming
      b. Encouragement to learn research methods and to conduct research
      c. Encouragement to share completed research by publication
   4. Sharing teaching hints
   5. Analysis of age group differences and methods of teaching to these groups
   6. Principles of training and conditioning
D. Development of skills and abilities
   1. Perfecting performance of strokes and techniques
   2. Practice in evaluating performance and correcting errors
   3. Practice in organizing groups of varying sizes for varying activities
   4. Practice in planning and teaching in a wide variety of situations and groups under supervision
   5. Observation of successful swimming instructors
E. Evaluation of student's skills, techniques and knowledge by written and practical measures
   1. Evaluation of endurance and performance of safety techniques

    2. Written reports of observations, readings and research
    3. Evaluation of student's teaching experiences
  F. Administration of the instructional program
    1. Classification
    2. Scheduling
    3. Safety standards
    4. Evaluation and certification of swimmers
    5. Basic knowledge of pool sanitation

IV. Procedures and Methods
  A. Dependent on the individual instructor and the structure of the program in which he is teaching

V. Bibliography
  A. Books

    1. American Association for Health, Physical Education and Recreation. What Research Tells the Coach About Swimming. Washington, D. C.: AAHPER, 1971.
    2. American National Red Cross. Swimming and Water Safety. Washington, D. C.: ARC, 1968.
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Instructor of Springboard Diving

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I. Course
  A. Number: (varies with institution)
  B. Title: Instructor of Springboard Diving
  C. Credits: 2 semester or 3 quarter (suggested)
  D. Term(s) offered: when demand justifies need
  E. Catalog description: Designed to provide experience in, and knowledges and understandings of, springboard diving (one meter) at instructional and beginning coaching levels
  F. Prerequisites
    1. Courses
      a. Beginning springboard diving course, or equivalent in practical experience
      b. Safety training (ARC Senior Lifesaving or equivalent)
      c. Standard first aid training
    2. Personal skill and experience
      a. Adequate performance of basic fundamentals of boardwork

        - b. Reasonable balance and coordination in forward and back dives
    - 3. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

- II. Objectives
    - A. General objective
        - 1. Gain the knowledges, understandings and minimal physical skills to be a qualified instructor of springboard diving on a one meter board
    - B. Specific objectives
        - 1. Master knowledges and understandings in cognitive domain
            - a. Terminology
            - b. Equipment
            - c. Laws of physics and their relation to diving
            - d. Teaching techniques
                - 1) Class organization: group and individual instruction
                - 2) Recommended teaching progressions for dives
                - 3) Specific coaching techniques
            - e. Safety practices
            - f. Teaching aids
            - g. Rules of competitive diving
                - 1) Performance
                - 2) Officiating
            - h. References and resources
            - i. Teaching-coaching skills in a practical situation
            - j. Judging diving
        - 2. Develop appreciations in affective domain
            - a. Laws of physics and kinesiology and their application to the individual in diving
            - b. Visual acuity and ability to make intelligent assessment
            - c. Ability to communicate purpose effectively to the diver
            - d. Psychology of teaching a risk activity
            - e. Psychology of coaching the competitor
        - 3. Develop performance skills in motor domain
            - a. Basic dives, or a leadup to these dives in each of the five diving groups, plus the forward and back somersaults
            - b. Spotting techniques

- III. Course Content
    - A. Knowledges
        - 1. Definition of terms
            - a. Diving groups (forward, back, reverse, inward, twisting)

- b. Dive positions (tuck, pike, layout, free)
- c. Other terms (short, long, cast, hurdle, excessive rocking, saves, crow hop, broken position, degree of difficulty cutting)

2. History and development of diving
3. Physics (mechanics)
   - a. Laws of motion in diving
   - b. Body axes
   - c. Path of a projected body
   - d. Body free in space
   - e. Center of gravity
   - f. Linear and angular motion
   - g. Angular velocity
   - h. Moment of inertia
   - i. Angular momentum
   - j. Conservation of angular momentum
   - k. Inertia
   - l. Friction
   - m. Centrifugal force
   - n. Torque
4. Competitive diving information
   - a. Degree of difficulty
   - b. Required and optional dives
   - c. Entry blanks
   - d. Organizations and programs concerned with diving
5. Equipment
   - a. Specifications
   - b. Maintenance
   - c. Sources
6. Officiating
   - a. The diving judge
   - b. The diving referee
   - c. The scoring table
   - d. The meet manager
7. Philosophy of teaching and coaching on the competitive level
8. Available references and teaching aids (books, articles, publications, charts, films)

B. Practical experience

1. General experience
   - a. Fundamental skills (personal and teaching)
   - b. Teaching progressions for dives
   - c. Reduction of diving fear as knowledge of practical physics increases

- d. Awareness of kinesthetic distinctions of body position
  - 1) Moving on the board
  - 2) In balance or off balance on board tip
  - 3) In relation to tensions at different times
  - 4) Realization and judgment of speed of motion
- 2. Specific skill experience
  - a. On the springboard
    - 1) Basic required dive progressions

      Note: An absolute fixed order of learning dives cannot be prescribed. Generally, the following order, or nearly so, is recommended. Some flexibility of choice must be allowed for individual differences among divers and diving teachers.
      - a) Forward
        - (i) Approach steps and hurdle
        - (ii) Forward jumps, tuck, pike and layout
        - (iii) Forward dive (straight, not swan)
        - (iv) Forward dive, pike position
        - (v) Forward dive, layout position
      - b) Back
        - (i) Back fall-ins
        - (ii) Back takeoff with jumps, tuck and layout
        - (iii) Back dive, layout
      - c) Twisting
        - (i) Forward jumps with half and full twist
        - (ii) Half twist fall-ins
        - (iii) Forward dive, half twist, layout
      - d) Inward
        - (i) Back jumps, layout
        - (ii) Inward dive, tuck or pike position
      - e) Reverse
        - (i) Forward jumps, layout position
        - (ii) Forward jumps with kick and reverse turn (reverse dive entry)
        - (iii) Reverse dive, tuck or layout position
    - 2) Basic optional dives

      Note: Some optional dives can be learned along with the basic dives, according to the inclination and potential of the divers. Consult references for recommended teaching progressions.
      - a) Forward somersault, tuck and/or pike
      - b) Back somersault, tuck and/or pike
      - c) Reverse somersault, tuck
      - d) Inward somersault, tuck

- e) Forward one and a half somersault, tuck and/or pike
- f) Forward somersault, one twist
- g) Back dive, half twist

3) Principles and techniques of saves
    - a) In the air
    - b) In the water

b. On the trampoline or dry land board

Note: This is an optional area of instruction according to the availability of equipment and of trained personnel. In a university with a good gymnastics program, demonstration and some experience can be offered.

1) Safety in the use of equipment
2) Spotting techniques
3) Diving approaches and takeoffs as adapted to equipment
4) Fundamental jumps
5) Basic drops (trampoline)
6) Basic springboard dives (dry land board)
7) Intermediate and advanced skills and progressions as applicable to equipment

c. Exercises for diving
    1) Warmups for general class situations
    2) Conditioning for competition

3. Teaching and coaching experience
    a. Analysis of faults as seen in class by observation, film or video tape
    b. Observation and discussion of dives as seen in other classes, other diving meets nearby, film loops or video tape
    c. Supervised teaching and coaching, where possible
    d. Practice teaching assignments, where possible
4. Officiating experience
    a. Practice within class (judging)
    b. Judging mock meet
    c. Assisting in bona fide meet, working along with experienced judges

IV. Procedures and Methods

A. General course procedures and methods
1. Lectures
2. Reading assignments, discussion
3. Film, film loops, video tape
4. Practical pool work

    5. Practical trampoline or land board work (optional)
    6. Conditioning exercises, on deck or in gym
    7. Practical teaching and coaching experiences
- B. Recommended evaluative procedures
    1. Written exam(s)
    2. Class participation in learning basic dives
    3. Critique of practice teaching and coaching
    4. Report on readings
    5. Possible projects for evaluation
        a. Comparative reading assignments
        b. Notebook compilation
        c. Teaching a series of lessons in diving
        d. Taking one or two individuals within a diving class for a specific coaching assignment

V. Bibliography

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C. Charts
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   2. Diving Technique Charts, Div. of Girls and Women's Sports, AAHPER, 1201 16th St., N.W., Washington, D.C. 20036.

Instructor of Swimming for the Handicapped

LLOYD C. ARNOLD (chairman), director of health and physical education, National Council of YMCAs, New York
WILLIAM M. BUSCH, assistant professor, University of Missouri, Columbia
DONATO CAPOZZOLI, program consultant, National Easter Seal Society, Chicago, Illinois
CARYL CROUCH, Deerfield, Illinois
CONNIE LAWRENCE, principal, Joseph M. McKinnon School, San Jose, California
DAN MEEHAN, American National Red Cross, Denver, Colorado
JOAN M. MORAN, director of physical education and recreation for the handicapped, University of Utah, Salt Lake City
GRACE D. REYNOLDS, director of special services, YMCA, Longview, Washington
JULIAN U. STEIN, consultant, Programs for the Handicapped, AAHPER, Washington, D. C.

I. Course
   A. Number: (varies with institution)
   B. Title: Instructor of Swimming for the Handicapped
   C. Credits: 2 semester or 3 quarter (suggested)
   D. Term(s) offered: when enrollment justifies need
   E. Course description: Lectures, demonstrations, and the practical application of aquatics techniques will be combined with clinical practice in swimming and related aquatics activities for mentally retarded, emotionally disturbed, and orthopedically and/or health-impaired individuals. Students completing this course will become certified Red Cross and/or YMCA aquatics instructors of the handicapped

F. Prerequisites
  1. Knowledge of
    a. Physical growth and motor development
    b. Motor learning theory
    c. Mechanical analysis of motor skills
    d. Theory (lifesaving, WSI)
    e. Specific handicapping conditions
    f. Basic physiology
  2. Watermanship and personal skill in
    a. Teaching aquatics skills to normal individuals
    b. Administering standard first aid
    c. Demonstrating accurately basic aquatics skills
    d. Communicating effectively with others
  3. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

II. General Objectives
  A. Understand nature, behavioral characteristics, and motoric limitations of various handicapping conditions
  B. Develop competence in adapting aquatics skills to individual needs of handicapped persons
  C. Become adept at preparing developmentally meaningful and individualized water-related movement experiences for handicapped children and youth
  D. Develop knowledge and technical skill necessary for working effectively with handicapped children and youth and their parents on individual and group basis
  E. Become competent, sensitive, flexible, and creative in working cooperatively with handicapped and other personnel in aquatics environment
  F. Receive certification as Instructor of Swimming for the Handicapped

III. Course Content
  A. Techniques for helping a child overcome basic fear of water
  B. Basic water adjustment activities
  C. Use of flotation devices for special handicapping conditions
  D. Detailed analysis (all teachable component parts) of basic aquatics skills
  E. Skill adaptations for special handicapping conditions
  F. Special water safety and lifesaving techniques for special handicapping conditions
  G. Special teaching techniques useful for instructing individuals with specific handicapping conditions

H. Specific techniques for getting severely handicapped individuals in and out of the swimming pool, locker room, etc., including necessary facility adaptations, use of equipment, and/or construction of facilities

I. Water games for enforcement of aquatics skills

J. Exposure to agencies conducting programs for the handicapped, and funding processes

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2. Bleasdale, Noel. They may also be Olympic swimmers. Swimming Times 41:470, Dec. 1964.
3. Davis, Ernie. Fresh approaches for combating persistent problems. Challenge, May 1968.
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Instructor of Skin and SCUBA Diving

JOHN L. CRAMER, associate professor and director of physical education, recreation, and athletics, University of San Diego, California
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LEE H. SOMERS (chairman), assistant professor, University of Michigan, Ann Arbor

I. Course
  A. Number: (varies with institution)
  B. Title: Instructor of Skin and SCUBA Diving
  C. Credits: 4 quarter or 3 semester (suggested)
  D. Term(s) offered: when demand justifies need
  E. Course description: Lectures on diving theory and teaching methodology, advanced skill training and practical teaching experience designed to prepare participants to teach recreational skin and SCUBA diving
  F. Prerequisites
    1. Courses
      a. Basic Skin and SCUBA Diving (certificate of training required)
      b. Lifesaving (ARC Senior or equivalent required; ARC Water Safety Instructor or equivalent recommended)
      c. First Aid (ARC Basic or equivalent required; ARC Advanced or Instructor or equivalent recommended; AHA Cardiac-Pulmonary Resuscitation Instructor recommended)
    2. Watermanship
      a. Swimming without skin diving equipment

    1) Swim 500 yards in less than 10 minutes
    2) Demonstrate at least two resting type swimming strokes in good form
    3) Demonstrate survival swimming for 20 minutes (treading water, floating, drownproofing techniques, etc.)
    4) Swim 25 yards underwater without surfacing
    5) Swim 50 yards underwater, surfacing only three times to breathe
    6) Tow a swimmer of equal size for 50 yards

b. Skin diving with mask, fins and snorkel
    1) Swim 1,000 yards nonstop, with all gear and without using hands, in less than 20 minutes (or equivalent)
    2) Don all skin diving gear underwater on one breath
    3) Demonstrate surface dives, water entries, buoyancy adjustment, various kicks with fins (front and back flutter, scissor, dolphin), underwater swimming and surfacing
    4) Make a complete rescue of another skin diver

c. SCUBA diving
    1) Buddy breathe and exchange breathing apparatus with a second diver without SCUBA, each swimming 50 yards wearing SCUBA
    2) Tow a fully equipped SCUBA diver 100 yards in less than 5 minutes
    3) Demonstrate ditch and recovery of SCUBA in good form
    4) Wearing a complete set of SCUBA equipment, swim 400 yards on the surface, breathing with a snorkel
    5) Purge water from mask underwater

d. Other
    1) Be at least 20 years old
    2) Have one year or more of diving experience since receiving basic SCUBA certification, with a total of at least 25 hours of openwater diving using SCUBA
        a) At least three dives to a depth of 60 feet or more and two dives to 40 feet or more for a period of not less than 30 minutes
        b) Both ocean and fresh water diving experience recommended
    3) Be in good physical condition for SCUBA diving as verified by medical examination, including chest X-ray

4) Possess a complete set of skin and SCUBA diving equipment in proper working condition
  a) Mask
  b) Fins
  c) Snorkel (with keeper)
  d) Personal flotation device (yoke type with both compressed gas and oral inflation)
  e) Complete exposure suit
  f) Adjustable weight belt
  g) Knife
  h) Depth indicator (wrist type)
  i) Compass (underwater wrist type)
  j) Watch (underwater)
  k) Regulator with pressure gauge (or separate pressure gauge)
  l) Standard SCUBA cylinder(s) with backpack or harness
  m) Adequate equipment bag, box or container

3. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

II. General Objective
  A. Prepare student to teach aspects of basic skin and SCUBA diving under the sanction of a nationally recognized instructor certification organization

III. Course Content
  A. Orientation
    1. Objectives
      a. Register student and provide him with required materials for course
      b. Inform student of exact nature of course and requirements for instructor certification
      c. Develop proper appreciation and attitude toward course
    2. Outline of instruction
      a. Completion of required forms
      b. Issuance of manuals and materials
        1) Availability of references
        2) Reading and review assignments
      c. Qualifications of an instructor
        1) Age
        2) Physical fitness
        3) Watermanship
        4) Knowledge

        - 5) Experience
        - 6) Motivation and attitude
    - d. Requirements for certification
    - e. Professional organizations and related certifying organizations
    - f. Course content review
    - g. Outline of course procedures
        - 1) Practice teaching
        - 2) Lectures
        - 3) Test
        - 4) Assignments and special projects
- B. Physical fitness
    - 1. Objectives
        - a. Provide students with basic understanding of fitness and conditioning
        - b. Acquaint student with simple method of developing and maintaining acceptable level of fitness
    - 2. Outline of instruction
        - a. Overview
            - 1) Fitness status of general public
            - 2) Necessity of fitness for diving
            - 3) Teaching fitness by example
        - b. Physical fitness
            - 1) Definition
            - 2) Measurement
            - 3) Rationale
            - 4) Physical stress
            - 5) Stress and the diver
                - a) Anxiety
                - b) Lack of skill
                - c) Inefficient movement
                - d) Inefficient heart
                - e) Hyperventilation
                - f) Overweight
                - g) Equipment resistance
                - h) Breathing resistance
                - i) Cold water
                - j) Work output
            - 6) Oxygen utilization
            - 7) Training effects
            - 8) Methods of conditioning
                - a) Circuit training
                - b) Exercise programs
                - c) Aerobics

        - 9) Evaluation of fitness (practical)
            - a) 12 minute test (aerobics program)
            - b) 1.5 mile run
    - c. Smoking and fitness
    - d. Teaching physical fitness in diving classes
- C. Diving equipment
  - 1. Objective
    - a. Acquaint student with various types of equipment used in SCUBA diving, including evaluation and selection, use and maintenance
  - 2. Outline of instruction
    - a. Overview
      - 1) Necessity for knowledge of equipment
      - 2) Instructor approach to equipment description and recommendation
    - b. Instructor-dive shop relationship
    - c. Skin diving equipment--mask, fins, snorkel (brief summary if covered in other section)
    - d. SCUBA equipment (brief summary since covered in separate section)
    - e. Accessory equipment (evaluation and selection, use and maintenance)
      - 1) Personal flotation device
        - a) Lifejacket
        - b) Buoyancy compensator
      - 2) Knife
      - 3) Weight belt and weights
      - 4) Watch
      - 5) Depth indicator
      - 6) Compass (including compass board)
      - 7) Line reels, line and buddy line
      - 8) Underwater lights
      - 9) Slates
      - 10) Communications units
      - 11) Surface floats
      - 12) Equipment bags
      - 13) Diver propulsion vehicles
      - 14) Spear guns
      - 15) Shark defense devices
      - 16) Other
    - f. Exposure suits
      - 1) Principle of protection
      - 2) Wet type
      - 3) Dry type
        - a) Unisuit--use and precautions

- 4) Maintenance
- 5) Wet suit compression

g. Instructor's personal equipment

- 1) Current
- 2) Good repair
- 3) Standard with limited personal modification
- 4) Example for student

D. Skin diving

1. Objectives
   - a. Develop student's ability to skin dive and teach skin diving
   - b. Prepare student for SCUBA diving
   - c. Develop student's confidence in water
   - d. Develop student's ability to equalize pressure
   - e. Familiarize student with various skin diver certification courses
2. Outline of instruction
   - a. Role of skin diver training
   - b. Brief review of methods of equalizing pressure in ears and sinus
   - c. Brief review of physiology of hyperventilation and underwater breathholding (see physiology and medical aspects for details)
   - d. Review of basic equipment (mask, fins, snorkel, and life jacket)

        - 1) Description
        - 2) Selection
        - 3) Application
        - 4) Maintenance
    - e. Buddy system diving and basic safety precautions
    - f. Skills (emphasis on performance, demonstration methods, and teaching and evaluating novices)
        - 1) Kicking with fins (diver's flutter, scissor, and dolphin)
        - 2) Defogging and fitting mask
        - 3) Snorkel clearing
        - 4) Entries
        - 5) Surface dives (feet first and head first)
        - 6) Swimming (surface and underwater)
        - 7) Skill development
    - g. Skin diving courses
        - 1) Requirements and prerequisites
        - 2) Organization
        - 3) Course content (as required by sanctioning organization)
        - 4) Special teaching methods
        - 5) Audiovisual aid applications
        - 6) Analysis of in-water demonstrations
        - 7) Safety precautions
            - a) Avoidance of breath-holding "contests" (do not exceed 60 seconds)
            - b) Buddy system teaching
        - 8) Open water exercises

- E. Underwater physics
    - 1. Objectives
        - a. Provide student with knowledge of physical properties of gases and liquids applicable to diving
        - b. Instruct student in methods of teaching physics
    - 2. Outline of instruction
        - a. Pressure
            - 1) Atmospheric
            - 2) Gauge
            - 3) Absolute
            - 4) Liquid
        - b. Water
            - 1) Density
            - 2) Buoyancy
            - 3) Conductivity

        - 4) Humidity
        - 5) Illumination
        - 6) Vision
        - 7) Acoustics
        - 8) Propulsion
      - c. Air
        - 1) Composition
        - 2) Compressibility (Boyle's Law)
        - 3) Expandability (Charles' Law)
        - 4) Pressure components (Dalton's Law)
        - 5) Solubility (Henry's Law)
      - d. Other gases used in diving
        - 1) Oxygen
        - 2) Helium
        - 3) Hydrogen
        - 4) Other
      - e. Teaching diving physics
        - 1) Application of physics to diving
        - 2) Content for basic course
        - 3) Integration of physics information with other subjects
        - 4) Visual aids
        - 5) Problem areas
- F. Medical aspects of diving
  - 1. Objectives
    - a. Review effects of pressure and changes of pressure on body
    - b. Provide student with working knowledge of anatomy and physiology of circulatory and respiratory systems in order to understand and teach effects of pressure change
    - c. Update student's knowledge of diving physiology
    - d. Instruct student in methods of teaching diving physiology
  - 2. Outline of instruction
    - a. Anatomy and physiology
      - 1) Anatomy and physiology of the circulatory system
      - 2) Anatomy and physiology of the respiratory system
        - a) Gas diffusion
        - b) Partial pressure of gases
        - c) Respiratory stimuli
      - 3) Body cavities containing air or gas
        - a) Lungs
        - b) Ears
        - c) Sinuses
        - d) Intestines

- b. Barotrauma (including review of symptoms, causes, prevention and first aid)
  - 1) General overview (definition, direct effects of pressure differentials)
  - 2) Squeezes
    - a) Ear injuries
      - (i) Equalizing pressure
      - (ii) Middle ear squeeze
      - (iii) Ruptured eardrum
      - (iv) External ear squeeze
    - b) Sinus squeeze
    - c) Thoracic squeeze (including blood shift phenomena)
    - d) Equipment-induced squeeze
    - e) Tooth squeeze
    - f) Gastrointestinal squeeze
  - 3) Rupture of lung tissue
    - a) Air embolism
    - b) Mediastinal emphysema
    - c) Subcutaneous emphysema
    - d) Pneumothorax
  - 4) Significance of medical exam and chext X-rays
- c. Impaired consciousness during breath-hold diving
  - 1) Respiration (brief review of mechanism)
  - 2) Breath-hold diving
  - 3) Hyperventilation
  - 4) Hypoxia (including symptoms, prevention and first aid)
- d. Breathing media contamination
  - 1) Acceptable standards for and testing of diver air
  - 2) Carbon monoxide
    - a) Sources and prevention
    - b) Mechanism or physiology
    - c) Symptoms
    - d) First aid
  - 3) Oil vapor
  - 4) Carbon dioxide
    - a) Contamination
    - b) Recirculating breathing apparatus
    - c) Controlled breathing problems
    - d) Symptoms, prevention and first aid
- e. Gas narcosis and toxicity
  - 1) Inert gas narcosis
    - a) Mechanism
    - b) Recognition and reaction

        2) Oxygen toxicity prevention
    f. Decompression sickness
        1) Physiology
        2) Modifying factors
        3) Prevention
        4) Recognition
        5) First aid
        6) Aseptic bone necrosis
    g. Other complications
        1) Lung infection
        2) External ear infection
        3) Hyperventilation syndrome
        4) Hypernea-exhaustion syndrome
        5) Overexertion
        6) Hyperthermia
    h. First aid
        1) Review basic first aid
        2) Cardiopulmonary resuscitation (CPR)
        3) Recognition of diving accidents
        4) First aid for diving injuries
            a) Potential air embolism victim
            b) Unconscious diver
        5) Use of oxygen in diving accidents
    i. Treating air embolism and decompression sickness
        1) Methods
        2) Tables
    j. Teaching methods and procedures
        1) Presentation of physiology and medical aspects in basic course
            a) Level
            b) Method
        2) Use of visual aids
        3) Practical exercise in first aid
        4) Instructor responsibility in teaching medical aspects
        5) Instructor references

G. Self-contained underwater breathing apparatus (SCUBA)
    1. Objectives
        a. Inform student of characteristics of types of SCUBA available
        b. Provide student with understanding of basic principles of operation of open-circuit SCUBA and auxiliary or accessory equipment
        c. Instruct student in proper maintenance of open-circuit SCUBA (including auxiliary equipment)

d. Instruct student in methods of teaching SCUBA characteristics, operation, maintenance and selection criteria to basic course students

2. Outline of instruction
   - a. Types of SCUBA (brief description)
     - 1) Closed circuit (oxygen and mixed-gas)
     - 2) Semiclosed circuit
     - 3) Open circuit
   - b. Open-circuit SCUBA
     - 1) Description
       - a) Compressed air breathing media
       - b) Applications and advantages
       - c) Limitations and disadvantages
       - d) Components
         - (i) One or more compressed air cylinders
         - (ii) Valve and manifold
         - (iii) Demand regulator
         - (iv) Harness or back pack
     - 2) Demand regulators
       - a) Types (single and double hose; one and two stage)
       - b) Basic principle of operation
         - (i) Piston and balanced valve first stage
         - (ii) Down-stream and tilt valve second stage
       - c) Performance standards
       - d) Auxiliary components
         - (i) Submersible pressure readout gauge
         - (ii) Auxiliary mouthpiece assembly
         - (iii) Low pressure warning mechanisms
       - e) Selection criteria
       - f) Maintenance (daily and periodic)
     - 3) High pressure cylinder(s)
       - a) Types
         - (i) Size
         - (ii) Basic construction
         - (iii) Materials (steel and aluminum alloy)
         - (iv) Special adaptations for buoyant cylinders
       - b) Cylinder valve (with or without low-pressure warning mechanisms)
         - (i) Single cylinder
         - (ii) Multiple cylinder manifolds
       - c) Harness and backpack
         - (i) Materials and construction
         - (ii) Special precautions

- (iii) Safety release harness
- (iv) Backpack-buoyancy compensation systems: description, applications and hazards
- d) Maintenance (daily and periodic)
- 4) Calculations of air consumption (normal, work and cold water)
  - a) Tables
  - b) Formulas
  - c) Procedure for determining personal air consumption
  - d) Theoretical problems
- 5) Criteria for selection of SCUBA system
- c. SCUBA diving skills
  - 1) Overview
    - a) Performance
    - b) Evaluation
    - c) Teaching methods
  - 2) Assembly of SCUBA
  - 3) Predive checkout
  - 4) Entries (back roll, forward roll, stride)
  - 5) Underwater swimming with SCUBA (kicks, body position)
  - 6) Buoyancy compensation
  - 7) Purging water from regulator
  - 8) Purging water from mask
  - 9) Air sharing (one and two hose)
  - 10) Emergency ascent training (techniques and hazards)
  - 11) Stress training
  - 12) Panic control
  - 13) Surface swimming with SCUBA
  - 14) Surface and underwater reserve
  - 15) Postdive SCUBA maintenance
- d. Charging SCUBA cylinder
  - 1) Compressors
  - 2) Air storage system
  - 3) Air standards and analysis
- e. Teaching methods
  - 1) Detail of subject matter required for basic course
  - 2) Teaching emphasis
    - a) Selection of equipment
    - b) Use of equipment
    - c) Maintenance of equipment
    - d) Safety

            - 3) Visual aids (types, availability, applications)
            - 4) Relating pool and classroom
- H. Air decompression and repetitive diving
    - 1. Objectives
        - a. Instruct student in various methods of decompression
        - b. Provide practice in practical application of decompression tables
        - c. Instruct student in applications and limitations of mechanical decompression meter
        - d. Instruct student in methods of teaching decompression tables and procedures
    - 2. Outline of instruction
        - a. Definition of decompression
        - b. Brief history of decompression
        - c. International variation in decompression tables
        - d. Observance of "no-decompression" limits recommended
        - e. Methods
        - f. U.S. Navy Standard Air Decompression Tables
            - 1) Terminology
                - a) Depth
                - b) Bottom time
                - c) Ascent rate
                - d) Stage decompression stops
                - e) Repetitive dive
            - 2) No-decompression dives
            - 3) Repetitive dive group
            - 4) Surface interval credit table
            - 5) Repetitive dive time table
            - 6) Exceptional exposure table
            - 7) Repetitive dive worksheet
        - g. Rearrangement of U.S. Navy tables for sport application
            - 1) Advantages
            - 2) Examples
            - 3) Limitations
        - h. Practical application of decompression tables by use of theoretical dives
            - 1) Normal dives
            - 2) Modifying factors (cold and arduous dives)
        - i. Mechanical decompression meter
            - 1) Description and principle of operation
            - 2) Practical application by use of theoretical dives
            - 3) Advantages
                - a) Variable depth dives
                - b) Multiple dive

        - c) Determining exposure relative to "no-decompression" limit
    - 4) Limitations
        - a) Depth and duration
        - b) Environmental conditions
        - c) Individual exertion
    - 5) Maintenance
- j. Decompression for diving at light altitude
- k. Teaching decompression tables and procedures
    - 1) Necessity of teaching this topic in a basic diving course
    - 2) Visual aids
    - 3) Development of theoretical dive models
    - 4) Sport diving applications

I. Aquatic environment

- 1. Objectives
    - a. Review and broaden student's knowledge of waves, tides, currents and marine life hazards
    - b. Emphasize necessity of knowing state of existing waves, tides, currents and marine organisms and their effect on diver
    - c. Acquaint student with environmental conditions not common to local area
    - d. Provide student with basic knowledge and methodology for teaching environmental aspects of diving
- 2. Outline of instruction
    - a. General overview
        - 1) Ocean vs. fresh water training
        - 2) Physical fitness and watermanship
        - 3) Safety
    - b. Basic physical oceanography
        - 1) Aquatic bodies
            - a) Oceans (gulfs, seas, straights, sounds, inlets)
            - b) Lakes
            - c) Rivers
            - d) Quarries
            - e) Caves
        - 2) Climate
            - a) Effects on diver
            - b) Effects on aquatic life
        - 3) Temperature
            - a) Thermoclines
            - b) Effects and adaptation
        - 4) Weather

- 5) Visibility
    - a) Seasonal variation
        - (i) Biological activity
        - (ii) Land runoff
        - (iii) Circulation
    - b) Pollution
- 6) Bottom composition
    - a) Sedimentary (mud, sand, pebbles)
    - b) Rock (solid, broken)
    - c) Coral
    - d) Vegetation (algae, weeds, kelp)
- 7) Bottom topography
    - a) Plateaus
    - b) Canyons
    - c) Walls
    - d) Reefs (coral, rock) and bars
    - e) Caves and tunnels
- 8) Shoreline topography
- 9) Man-made structures
    - a) Quarries
    - b) Jetties
    - c) Piers and wharfs
    - d) Oil rigs
    - e) Shipwrecks
    - f) Artificial reefs
- 10) Tides
    - a) Tide tables
    - b) Tidal currents
- 11) Waves
    - a) Cause
    - b) Types (sea, seiches, swells, surf)
    - c) Wind currents
    - d) Currents in surf zone
        - (i) Backwash
        - (ii) Longshore
        - (iii) Rip
    - e) Entries and exits
        - (i) Shoreline topography--sand beach, rocky shore
        - (ii) Selection of time and location

c. Marine life hazards

- 1) Marine animals that sting
    - a) Worms
    - b) Jelly fish (sea wasp, others)

    - c) Portuguese man-of-war
    - d) Sea anemones
    - e) Stinging corals
    - f) Preventive measures
    - g) First aid
- 2) Marine animals that abrade, lacerate or puncture
    - a) Barnacles
    - b) Mussels
    - c) Coral
    - d) Sea urchins
    - e) Cone shells
    - f) Venomous fish
        - (i) Sting ray
        - (ii) Scorpion fish
        - (iii) Zebra fish
        - (iv) Stone fish
        - (v) Others (lionfish, etc.)
    - g) Octopus and squid
    - h) Sea snakes
    - i) Preventive measures
    - j) First aid
- 3) Marine animals that bite
    - a) Sharks
    - b) Barracudas
    - c) Eels (moray, wolf)
    - d) Killer whales
    - e) Groupers
    - f) Sea lions
    - g) Precautions
    - h) First aid
- 4) Marine animals that are poisonous to eat
    - a) Shellfish
    - b) Fish
    - c) First aid
- 5) Other marine animals
    - a) Abalone
    - b) Scallops
    - c) Crabs
    - d) Lobsters
    - e) Nudibranch
    - f) Starfish
    - g) Sea cucumbers
    - h) Others (sponges, turtles, etc.)

        - 6) Marine plants
            - a) Kelp
            - b) Weeds
            - c) Precautions
    - d. Freshwater life hazards
        - 1) Fish
        - 2) Reptiles
            - a) Snakes
            - b) Turtles
            - c) Alligators and crocodiles
            - d) Other
        - 3) Plants
        - 4) Precautions
        - 5) First aid
    - e. Other environmental factors--techniques, safety precautions, equipment, hazards
        - 1) Cave diving
        - 2) River diving
        - 3) Ice diving
    - f. Teaching methods and procedures
        - 1) Visual aids (type and resources)
        - 2) Basic course content
        - 3) References

- J. Open water rescue and water safety for divers
    - 1. Objectives
        - a. Determine student's lifesaving proficiency and improve both swimming and lifesaving
        - b. Instruct student in special techniques of lifesaving and first aid applied to skin and SCUBA diving
        - c. Develop student's confidence in his ability and equipment
        - d. Provide student with lifesaving knowledge and skill required to conduct a basic course
    - 2. Outline of instruction
        - a. Review of lifesaving skills and philosophy
        - b. Surface rescue techniques for skin and SCUBA diving
            - 1) Use of floats
            - 2) Approach
            - 3) Assist
            - 4) Weight belt removal and buoyancy device inflation
            - 5) Carries and towing
        - c. Recovery of a submerged unconscious victim
            - 1) Skin diver
            - 2) SCUBA diver (prevention of air embolism)

    - d. Deep and shallow water artificial respiration (mouth-to-mouth)
      - 1) Use of floats
      - 2) Without flotation
      - 3) While towing
      - 4) Aids (snorkel, etc.)
      - 5) Wading
      - 6) Single and multiple rescues
    - e. Personal flotation equipment (inflatable lifejacket, etc.)
      - 1) Pre-dive checks: lifejacket malfunction
      - 2) Daily and periodic maintenance
      - 3) Wearing and adjustment of lifejacket
      - 4) Rescue and towing methods
    - f. Potential panic situations (e.g., hyperventilation syndrome
    - g. In-water injuries
- K. Open water diving
  - 1. Objectives
    - a. Provide student with knowledge required for planning and conducting open-water dives
    - b. Establish procedures for open-water "check-out" dives and classes
    - c. Develop safety standards required for open-water classes
  - 2. Outline of instruction
    - a. General overview
      - 1) Need for open-water instruction
      - 2) Instructor responsibilities
      - 3) Requirements for dive planning
    - b. Personnel
      - 1) Student prerequisite performance
      - 2) Instructor supervision
      - 3) Dive teams
    - c. Preliminary dive planning
      - 1) General survey of task or lesson objectives
      - 2) Evaluation of environmental conditions
        - a) Necessity
        - b) Weather
        - c) Current and tide conditions
        - d) Ship traffic
        - e) Bottom type
      - 3) Selection of diving techniques
      - 4) Selection of divers and assignment of tasks
      - 5) Selection of equipment
      - 6) Fulfillment of safety precautions (emergency plan)

        - 7) Calculation of air requirements
        - 8) Calculation of air volume in partially filled cylinder
        - 9) Briefing personnel
    - d. Diving vessels
        - 1) Personal
        - 2) Charter
        - 3) Equipment requirements
        - 4) Basic seamanship
    - e. Buddy system
        - 1) Standard procedure
        - 2) Use of body line
        - 3) Buddy's role in an emergency

- L. Teaching methods
    - 1. Objectives
        - a. Provide student with basic knowledge of teaching methods
        - b. Teach student how to organize courses and prepare lesson plans
        - c. Instruct student in use of visual aids
        - d. Review methods of pool and open water instruction
        - e. Provide insight into testing and evaluation
    - 2. Outline of instruction
        - a. Qualifications of an instructor
            - 1) Physical and mental fitness
            - 2) Knowledge and skills
            - 3) Watermanship
            - 4) Experience
        - b. Laws of learning (brief review)
        - c. Educational psychology and the diving student
            - 1) Motivation
            - 2) Effective teaching
        - d. Teaching techniques
            - 1) Art of instruction
            - 2) Class organization (course planning)
            - 3) Preparing a lesson plan
                - a) Objectives (aims and goals)
                - b) Introduction
                - c) Presentation
                - d) Summary
                - e) Equipment requirements
            - 4) Teaching progression
            - 5) Public speaking
                - a) Instructor's appearance
                - b) Class size

        - c) Voice
        - d) Gestures
        - e) Use of aids
    - 6) Teaching tips
- e. Training aids
    - 1) Purpose
    - 2) Selection
    - 3) Type (application; advantages and disadvantages)
        - a) Graphic
        - b) Three dimensional
        - c) Recorded
        - d) Projected--opaque, overhead, film strip, slides, movie
        - e) Chalkboard
        - f) Handouts
- f. Classroom arrangement
    - 1) Location
    - 2) Physical factors
        - a) Lighting
        - b) Temperature
        - c) Seating
        - d) Distractions
- g. Pool teaching
    - 1) Pre-class organization
    - 2) Safety equipment and instruction
    - 3) Emergency plan
    - 4) Equipment
        - a) Source
        - b) Type
        - c) Air
    - 5) Daily lesson plan
    - 6) Pool session
        - a) Warm-up
        - b) Review
        - c) Demonstrations and explanation
            - (i) Class arrangement
            - (ii) Use of assistants
        - d) Practice
        - e) Evaluation
        - f) Games
- h. Open water dives
- i. Testing and evaluation
    - 1) Written
        - a) Types of questions: true-false, essay, matching, multiple choice

            - b) Constructing questions and exam format
            - c) Grading
            - d) Quizzes and final exam
        - 2) Pool
            - a) Skill evaluation
            - b) Testing sequences
            - c) Fitness
            - d) Recommended performance levels
        - 3) Oral
        - 4) General overall evaluation (certify or not certify)
        - 5) Test as an aid to teaching
    - j. Course evaluation by students
    - k. Course and lesson analysis by staff
    - l. Student-instructor relationship
    - m. Resource material
        - 1) Instructor's personal library
        - 2) Textbook
            - a) Review of selected texts
            - b) Selection criteria
            - c) Coordination of course with text
        - 3) Student references
    - n. Public relations

- M. Legal aspects
  - 1. Objectives
    - a. Inform student of various legal ramifications of teaching skin and SCUBA diving
    - b. Inform student how to protect himself against legal actions
    - c. Inform student of various insurance programs and of necessity of maintaining coverage
  - 2. Outline of instruction
    - a. General overview
      - 1) Law suits
      - 2) Legal responsibility
      - 3) Legal vs. moral aspects
    - b. Responsibilities of instructor
      - 1) Teaching the "standard of the community"
      - 2) Keeping informed
      - 3) Lifesaving and first aid capability
      - 4) Course and class organization
      - 5) Keeping complete and accurate records
        - a) Type
        - b) Reason
        - c) Method

            6) Requiring medical examinations
            7) Waiver or acknowledgement of risk forms
            8) Tests
            9) Relationship with instructor organization
            10) Relationship with employer
            11) Assistant instructors
        c. Negligence and liability
            1) Definition
            2) Impact of law suit
        d. Moral responsibility
        e. Liability insurance
            1) Necessity
            2) Source
            3) Coverage
                a) Activities
                b) Amount
                c) Cost to instructor
        f. Action in event of fatal accident
            1) Detailed written documentation of events
                a) Instructor
                b) Assistants
                c) Items to be covered
            2) Discussions with law enforcement agencies (facts only)
            3) Legal counsel (immediately)
            4) Avoidance of news media
        g. Proper community image

N. Advanced and specialty diving programs
    1. Objectives
        a. Familiarize student with advanced and specialty activities that may be taught in addition to basic courses
        b. Acquaint student with organization and special teaching procedures for advanced and specialty courses
    2. Outline of instruction
        a. General overview
            1) Significance of advanced and specialty diving instruction
            2) Need for supervised open water diving experience
        b. Brief review of diving accident situation
            1) Summary of Los Angeles County and Rhode Island findings
            2) Significance of advanced training and supervised experience in accident prevention

- c. Organization of advanced course
    - 1) Instruction locations (classroom, pool and open water)
    - 2) Medical examinations
    - 3) Pre-test
    - 4) Materials and special diving equipment
    - 5) Text and information handouts
    - 6) Certification
- d. Advanced course content (classroom, pool, and open water portion of activities; 1-9 are generally required, remainder optional or elective; content and extent of coverage varies with geographic location and instructor)
    - 1) Diving equipment
    - 2) Diving first aid
    - 3) Diving lifesaving
    - 4) Underwater navigation
    - 5) Limited visibility diving (night diving)
    - 6) Search and recovery
    - 7) Light salvage
    - 8) Environment
    - 9) Deep diving (tables and decompression)
    - 10) Altitude diving
    - 11) Underwater photography
    - 12) Cave diving
    - 13) Lake and river diving
    - 14) Boat operation and seamanship
    - 15) Gold diving
    - 16) Collecting and research diving
    - 17) Spear fishing
    - 18) Ice diving
    - 19) Commercial diving
    - 20) Military diving
    - 21) Competitive pool activities
    - 22) Competitive open water activities
    - 23) Chamber operation
- e. Criteria for selecting advanced course content
    - 1) Geographic location
    - 2) Instructor talent
    - 3) Requirements of various national organizations
- f. Specialty programs (generally an in-depth coverage of any major topic in advanced course)
    - 1) Evaluating instructor qualifications
    - 2) Dive master programs
    - 3) Assistant instructor programs

O. Underwater photography (example of advanced course unit)
  1. Objective
    a. Provide student with knowledge of underwater photographic techniques and equipment
  2. Outline of instruction
    a. Overview
      1) Application of photography to underwater research
      2) Basic coverage only in this course
      3) Advanced underwater photography training
    b. Characteristics of light under water
      1) Reflection and refraction
      2) Absorption of color
      3) Scattering
    c. Photography basics
      1) Camera mechanics
      2) Exposure
      3) F-stop
      4) Depth of field
      5) Shutter speed
      6) ASA ratings
    d. Camera selection
      1) Film size
      2) Viewing and focusing
      3) Shutter mechanism
      4) Controls
        a) F-stop
        b) Shutter speed
        c) Focus
        d) Flash or strobe synchronization
      5) Lens
        a) Wide angle
        b) Normal
        c) Micro
        d) Close-up
          (i) Attachments
          (ii) Extension tube
          (iii) Framer
        e) Telephoto
        f) Fisheye
        g) Other
        h) Selection of lens
      6) Camera housing
        a) Custom
        b) Standard
        c) Materials

- 7) Cameras
  - a) Nikonos
  - b) Nikon-F or F_2 in housing
    - (i) Giddings
    - (ii) Oceaneye
    - (iii) Other
  - c) Rolleimarin
  - d) Hasselblad

e. Nikonos system
- 1) Camera description
- 2) Lens: 15 mm, 21 mm, 28 mm, 35 mm, 80 mm
- 3) Close-up
  - a) Attachment lens
  - b) Extension tubes (1:1, 2:1, 3:1)
  - c) Frames
- 4) Flash and strobe
- 5) Filters
- 6) Other accessories
- 7) Advantages and limitations
- 8) Caring for a flooded Nikonos

f. Available light photography
- 1) Subject
- 2) Film
  - a) Black and white: Tri-X, Plus-X
  - c) Color: HS, EX, KX
- 3) Filters
- 4) Shutter speed
- 5) Estimating f-stop
- 6) Pushing ASA rating and special developing

g. Artificial light photography
- 1) Strobe vs. bulb
- 2) Synchronization
- 3) Strobe selection
- 4) Techniques
- 5) Camera settings
- 6) Caring for a flooded strobe
- 7) Film

h. Turbid water photography
- 1) Standard camera
- 2) Special adaptations

i. Close-up photography
- 1) Extension tubes
- 2) 55 mm Nikor Micro
- 3) Film
- 4) Lighting

j. Light meters for underwater
k. Movie cameras (brief review)
    1) Super-8 vs. 16 mm
    2) Housings
    3) Camera selection
    4) Lighting
    5) Techniques
l. References

IV. Procedures and methods
  A. Course instructor
    1. The instructor responsible for teaching the diving instructor's course shall be a certified diving instructor, certified by one of the nationally recognized agencies.
    2. He must have served previously on a diver instructor certification staff with his respective agency.
    3. Appropriate guest lecturers and other certified instructors are to assist in the course.
  B. Practice teaching
    1. All participants shall successfully complete at least one term (one complete course) of practice teaching in a basic skin and SCUBA diving course under the direct supervision of a certified skin and SCUBA diving instructor.
  C. Open water dives
    1. During the instructor training course the student shall participate in at least eight open water dives (two may be conducted on the same day) which provide a wide range of diving experiences under varying environmental conditions.
    2. At least one of these dives shall be assisting on a qualification dive for a basic diving course.
  D. Time requirement
    1. In order to meet standards recommended by the National Association of Underwater Instructors, this course should consist of at least 76 hours of class (including practice teaching and open water dives).
    2. Only one hour of time credit shall be given for an open water dive, even though the dive may take more than an hour.
  E. Certification procedures
    1. Certification of skin and SCUBA diving instructors shall be through one of the nationally recognized agencies which has an active program for evaluation and certification of diving instructors.

2. These agencies must comply with the following criteria:
   a. Meet certification standards as specified in this document
   b. Provide an adequate in-service training program
   c. Have adequate procedure whereby the agency may continually evaluate their instructors and take appropriate actions when standards of instruction are not being upheld
   d. Have adequate instructor renewal procedures
   e. Offer acceptable basic minimum skin and SCUBA diving course standards.
3. These agencies are encouraged to provide adequate instructor evaluation and certification programs for those persons who complete an Instructor's Course as described in this document.
4. This evaluation and certification program should consist of:
   a. Orientation
   b. Written examinations
   c. Watermanship test--pool and open water
   d. Teaching presentations: classroom
   e. Teaching presentations: practical
   f. Critiques and problem discussion
   g. Board reviews.

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4. The Undersea Journal, Professional Association of Diving Instructors, Costa Mesa, Calif. (quarterly).

Instructor of Small Craft and Open Water Activity

ROBERT F. BURNSIDE (chairman), National Director of Small Craft, American Red Cross, Washington, D. C.

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MRS. NEILL MILLER, chairman of physical education department, Barry College, Miami, Florida

DON ROBINSON, pool director, Mankato State College, Mankato, Minnesota

INSTRUCTOR OF SAILING

I. Course
  A. Number: (varies with institution)
  B. Title: Instructor of Sailing
  C. Credits: 2 quarter or 3 semester (suggested)
  D. Term(s) offered: when demand justifies need
  E. Course description: Methods and materials for teaching skills, theory and techniques of handling small sail craft as required for the American National Red Cross Sailing Instructor's Certificate
  F. Prerequisites
    1. Ability to maintain self in water for minimum of 10 minutes while fully clothed
    2. Basic sailing skills
    3. 18 years of age
    4. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

II. Objectives
  A. General objectives
    1. Develop skill, knowledge, and confidence to handle efficiently a sailcraft in suitable weather
    2. Learn selection, maintenance and management of sailboats and accessory equipment
    3. Develop proper attitude
    4. Maintain safe handling skills and rescue techniques
    5. Learn sailing rules and regulations (local, county, state, and federal)
    6. Learn brief history of sailing and its reason for development
    7. Learn various types and classes of sailboats
    8. Learn nautical terms of sailing
  B. Specific objectives: acquire skills, knowledges and understandings of the following
    1. Sailboat types
    2. Sailboat classes
    3. Sailing theory
    4. Selection and care of sails
    5. Aerodynamics of sails
    6. Sail plans
    7. Theory of bending a sail
    8. Whipping, coiling a line
    9. Proper technique and use of knots, such as clove hitch, figure eight, reef, slipped reef, bowline, round turn and two half hitches, sheet bend, rolling hitch, eye slice
    10. Use of a dinghy as a tender
    11. Reaching a craft for sailing
    12. Getting underway, reaching, coming about
    13. Proper loading and boarding
    14. Proper moorings
    15. Proper approach and boarding of a moored sailboat
    16. Securing the sailboat
    17. Sail rigs
    18. Standing and running rigging
    19. Points of sailing
    20. Sail trimming
    21. Equipment and lighting regulations
    22. Lee and weather helms
    23. Boat trim
    24. Sail trim while running
    25. Sailing wing and wing
    26. Weather lore

27. Sailing under bad weather conditions
28. Rules of the road
29. Use of ground tackle; anchor bend
30. Rescue techniques
31. Racing rules
32. Race course layout
33. Artificial respiration techniques

III. Course Content
- A. Unit I
  1. History of sailing
  2. Types of sailboats
     - a. Prams
     - b. Dinghies
     - c. Board boats
     - d. Canoes
     - e. Catamarans and trimarans
     - f. Day sailers
     - g. Cruising boats
     - h. Racing
  3. Classes of sailboats
     - a. One design
     - b. Development
     - c. Rating
  4. Measurement rules
  5. Sailboat hulls
     - a. Planning
     - b. Displacement
  6. Stability
     - a. Center of gravity (transverse stability)
     - b. Center of buoyancy
       - 1) Center of effort
       - 2) Righting moment
     - c. Center of lateral resistance
       - 1) Centerboards
       - 2) Keels
       - 3) Baggerboards
       - 4) Leeboards
       - 5) Bilgeboards
  7. Sails
     - a. Materials used in sails
     - b. Nomenclature
     - c. Care of sails
     - d. Types of sails

            - 1) Historical
            - 2) Modern
        - e. Aerodynamics of sails
    - 8. Marlinspike
        - a. Whipping
        - b. Clove hitch
- B. Unit II
    - 1. Sail plans
        - a. Single sail
            - 1) Lateen rig
            - 2) Cat rig
        - b. Multi-sail rigs
            - 1) Sloop
            - 2) Cutter
            - 3) Ketch
            - 4) Yawl
            - 5) Schooner
            - 6) Square rigged
            - 7) Combination rigs
                - a) Brigantine
                - b) Staysail rigs
    - 2. Rigging
        - a. Standing
        - b. Running
    - 3. Equipment
        - a. Required--federal and state
        - b. Recommended additional equipment
        - c. Personal gear
    - 4. Trimming
        - a. Weight adjustment
        - b. Centerboard position
        - c. Sails
    - 5. Marlinspike seamanship--knots
        - a. Overhand
        - b. Reef
        - c. Bowline
        - d. Slipped reef
        - e. Figure eight
    - 6. Use of boat fenders
        - a. Powered
        - b. Manually propelled
- C. Unit III
    - 1. Readying the boat
        - a. Boarding

        - b. Lowering centerboard, daggerboard, or bilgeboards
        - c. Attaching rudder and tiller
        - d. Bailing out the boat
        - e. Stowing gear
        - f. Bending on sails--main and jib
        - g. Raising sails--main and jib
    - 2. Getting underway
        - a. Wind direction
        - b. Casting off
        - c. Trimming sheets--main and jib
    - 3. Points of sailing
        - a. Beating
        - b. Reaching
            - 1) Close
            - 2) Beam
            - 3) Broad
        - c. Running
        - d. Tacks--starboard and port
    - 4. Approach to a mooring (or pier)
        - a. Wind direction
        - b. Speed control
        - c. Securing the boat
    - 5. Marlinspike seamanship--knots
        - a. Round turn and two half hitches
        - b. Sheet bend
        - c. Rolling hitch
- D. Unit IV
    - 1. Wind
        - a. True
        - b. Apparent
    - 2. Trimming of sails
        - a. Beating
        - b. Reaching
            - 1) Close
            - 2) Beam
            - 3) Broad
        - c. Running
    - 3. Maneuvering
        - a. Tacking to windward (coming about)
        - b. Tacking downwind
            - 1) Coming about
            - 2) Jibbing
        - c. Reversing course
            - 1) Beating or reaching to running

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        - 2) Running to beating or reaching
    - 4. Use of personal flotation devices
    - 5. Capsize procedure
        - a. Personal safety
        - b. Retrieving boat and equipment
    - 6. Marlinspike seamanship--splices
        - a. Eye
        - b. Short
        - c. Long
    - 7. Cleating
- E. Unit V
    - 1. Regulations
        - a. Federal
        - b. State
        - c. Local
    - 2. Safety and rescue techniques
        - a. Retrieving a man overboard
        - b. Mouth-to-mouth artificial respiration
        - c. First air techniques
    - 3. Weather helm
        - a. Crew and equipment weight
        - b. Position of centerboard
        - c. Trim of sails
        - d. Rake (fore-aft tilt) of mast
    - 4. Lee helm
        - a. Crew and equipment weight
        - b. Position of centerboard
        - c. Trim of sails
        - d. Rake (fore-aft tilt) of mast
    - 5. Picking up a mooring
    - 6. Pier landings
    - 7. Rope (line)
        - a. Selection
            - 1) Tensile strength
            - 2) Resistance to abrasion, rot, and marine life
            - 3) Elasticity
            - 4) Cost
        - b. Types of rope and their qualities
            - 1) Manila
            - 2) Cotton
            - 3) Nylon
            - 4) Dacron
            - 5) Polyethylene
            - 6) Polypropylene
        - c. Care

F. Unit VI
  1. Rules of the road
    a. International
    b. Inland
    c. Great Lakes
    d. Western rivers
    c. Local
  2. Uniform waterway markers
  3. Anchoring
    a. Types of anchors
      1) Northill
      2) Danforth
      3) Mushroom
      4) Grapnel
      5) CQR
      6) Other
    b. Selection of anchor and anchor line
      1) Hull displacement
      2) Bottom conditions
      3) Proper anchor weight
      4) Proper size, length, and type of anchor line
    c. Anchor chain
    d. Technique
      1) Approach to the anchorage
      2) Lowering the anchor
      3) Raising the anchor and getting underway
  4. Maintenance
    a. Sails
    b. Hull
    c. Running rigging
    d. Standing rigging
    e. Equipment and accessories
    f. Boat trailer
  5. Heaving lines
  6. Marlinspike seamanship
    a. Anchor bend
    b. Review of all knots covered prior to this unit
G. Unit VII
  1. Weather
    a. Forecasts
      1) Local paper
      2) Radio - TV
      3) Weather maps

- b. Visual indications of approaching weather
  - 1) Clouds
  - 2) Winds and wind shifts
  - 3) Barometer
- c. Severe weather
  - 1) Thunderstorms
  - 2) Storm signals (day, night)

2. Sailboat handling in bad weather
   - a. Reefing
   - b. Beating to safety
   - c. Reaching to safety
   - d. Running to safety
   - e. Use of sea anchor
3. Practice float
   - a. All boat handling skills
   - b. All safety and rescue skills

   Note: These skills must be perfected through practice during the conduct of each unit.
4. Racing
   - a. Courses
     - 1) Triangular
     - 2) Windward-leeward
   - b. Rules
     - 1) Before the start
     - 2) After the start

H. Unit VIII -- Teaching methods

Note: Students in this course have not been given information on fundamentals of learning, teacher-student relationships, teaching aids, testing or other factors affecting the learning process. It is assumed they will receive this information through other required courses in the school of education.

1. Class organization for teaching skills, ashore and afloat
2. Kinesiological and mechanical factors influencing skill development in sailing
3. Teaching methods as adapted to the teaching of sailing
4. Effective teaching approaches and teacher behavior for various age groups
5. Teaching related to special groups
6. Organizing and administering sailing programs
7. Equipment and facility management (camp, community, and school sailing programs)
   - a. Selection and securing of equipment
   - b. Care and maintenance of equipment
   - c. Storage of equipment

        - d. Effective use of equipment
        - e. Integration of sailing into existing programs
        - f. Waterfront layouts for sailing
        - g. Safety supervision, ashore and afloat
    - 8. Evaluation methods (student, instructor, course)

IV. Procedures and Methods
- A. Evaluation of student
    - 1. Sailing knowledge
    - 2. Sailing skills
    - 3. Attitude
    - 4. Ability to safely supervise students in various outdoor environments
- B. Assignments made at the discretion of the instructor to assure accomplishment of the course objectives

V. Bibliography

- A. Books
    - 1. American National Red Cross. Basic Sailing. Washington, D.C.: ARC, 1966.
    - 2. Boy Scouts of America. Small-Boat Sailing (Merit Badge Series). New Brunswick, N.J.: BSA, 1965.
    - 3. Carter, Samuel, III. How to Sail. New York: Sentinel Book Publishers, 1957.
    - 4. Clark, Alice and Clark, Lincoln. The ABC's of Small Boat Sailing. Garden City, N.Y.: Doubleday, 1963.
    - 5. George, M. B. Basic Sailing. Vol. 45, Motor Boating's Ideal Series. New York: Hearst Books, 1963.
    - 6. One-Design & Offshore Yachtsman. Encyclopedia of Sailing. New York: Harper & Row, 1971.
- B. Film
    - 1. Basic Sailing. 16 mm, 20 1/2 min., sound, color. Film #321506. Produced by Columbia Yacht Company, 1968.

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INSTRUCTOR OF POWER BOATING

I. Course
  A. Number: (varies with institution)
  B. Title: Instructor of Power Boating
  C. Credits: 2 semester or 3 quarter (suggested)

D. Term(s) offered: when demand justifies need
E. Course description: Skills and theory in the safe handling of various types of power boats, and methods and materials for teaching basic power boating
F. Prerequisites
  1. Survival swimming skills as required by the American National Red Cross for its Small Craft Instructor Courses
  2. Basic boating skills
  3. 18 years of age
  4. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

II. Objectives
A. General objectives
  1. Provide fundamental knowledge and skill necessary to operate safely various types of power boats
  2. Identify and explore various applications of this knowledge and skill
  3. Relate theory and methods of teaching to power boating
B. Specific objectives
  1. Teach safe handling of power boats in various environmental and weather conditions
  2. Participate in activities utilizing power boats
  3. Instill an attitude of safety and teach safety and rescue skills
  4. Afford opportunity to practice power boat skills on the water under varying conditions
  5. Teach selection, maintenance and management of power boats and accessory equipment
  6. Provide teaching and resource materials pertinent to all phases of power boating
  7. Allow ample opportunity for practice of methods and organization of class for instruction

III. Course Content
A. Small boat handling
  1. Definition and types of motor boats
    a. Classes
      1) Less than 16 feet
      2) 16-25 feet
      3) 26-39 feet
      4) 40-65 feet
    b. Hull types
      1) Displacement--advantages and disadvantages
      2) Planning--advantages and disadvantages

- c. Materials used in construction
  - 1) Wood
  - 2) Metal
  - 3) Synthetic
- d. Hull shapes
  - 1) Flat bottom
  - 2) V-bottom
  - 3) Round bottom
  - 4) Multi-hull
- e. Selecting proper boat
- f. Boat types
  - 1) Prams
  - 2) Dinghies
  - 3) Rowboats (skiffs)
  - 4) Utility outboards
  - 5) Runabouts
  - 6) Cruisers
  - 7) Houseboats
- g. Motors
  - 1) Inboard
  - 2) Outboard
  - 3) Inboard-outboard drive
- h. Outboard rig--matching boats and motors

2. Handling the outboard
   - a. Attaching motor to boat
   - b. Getting under way

B. Practice afloat

1. Seamanship
   - a. Nautical terms
   - b. Marlinspike
   - c. Anchoring
2. Rules of the road
3. Mooring and landing
4. Boat maneuvering
5. Safety
   - a. Avoiding accidents
   - b. Equipment and government regulations
   - c. Operating craft in various weather and water conditions
   - d. Signaling for assistance
   - e. Capsizing skills
   - f. Towing
   - g. First aid

- C. Piloting and aids to navigation
  - 1. Compass
  - 2. Charts
- D. Boat trailers and their use
- E. Maintenance
  - 1. Hulls
  - 2. Motors
  - 3. Accessories
- F. Power boating activities
  - 1. Competition
  - 2. Cruising and tripping
  - 3. Water skiing
- G. Teaching methods
  - 1. Refer to page 71 under Instructor of Sailing

IV. Procedures and Methods

- A. Evaluation of student
  - 1. Power boat handling skills
  - 2. Knowledge of subject matter
  - 3. Overall attitude
  - 4. Ability to safely impart knowledge and skill to others
- B. Assignments based on
  - 1. Available craft
  - 2. Motors
  - 3. Facility
  - 4. Weather conditions

V. Bibliography

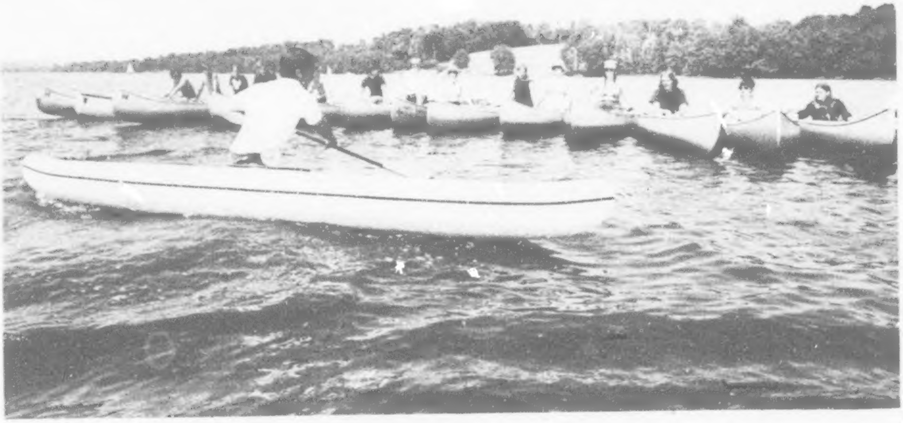
A. Books

1. American National Red Cross. Basic Outboard Boating. Washington, D. C.: ARC, 1964.
2. Chapman, Charles F. Piloting, Seamanship, and Small Boat Handling. New York: Hearst Books, 1971.
3. ____________, ed. Boat Maintenance Afloat and Ashore Parts II and III. Vols. 29-30, Motor Boating's Ideal Series. New York: Hearst Books, 1963-64.
4. Kals, W. S. Practical Boating. Garden City, N. Y.: Doubleday, 1969.
5. Miller, Conrad. Small Boat Engines Inboard and Outboard. New York: Sheridan House, 1961.
6. United States Coast Guard Auxiliary. Boating Safety and Seamanship. Washington, D. C.: Coast Guard Auxiliary National Board, 1971.

7. United States Coast Guard (Department of Transportation). Official Recreational Boating Guide. Washington, D. C.: Government Printing Office, 1971.
8. Weeks, Morris, Jr. The Complete Boating Encyclopedia. New York: Golden Press, 1964.

B. Resource Organizations
   1. American National Red Cross, Safety Programs, 18th and E Sts., N. W., Washington, D. C. 20006
   2. National Association of Engine and Boat Manufacturers, Inc., 537 Steamboat Rd., Greenwich, Conn. 06830
   3. National Association of State Boating Law Administrators (Roy Downing, President), State Conservation Commission, State Office Building, 300 4th St., Des Moines, Iowa 50319
   4. Outboard Boating Club of America, 401 N. Michigan Ave., Chicago, Ill. 60611
   5. U. S. Coast Guard, Coast Guard Headquarters, 400 7th St., S. W., Washington, D. C. 20591
   6. U. S. Coast Guard Auxiliary, Coast Guard Headquarters, Director of Auxiliary, Washington, D. C. 20591
   7. U. S. Power Squadrons, 50 Craig Rd., P. O. Box 345, Montvale, N. J. 07645

C. Film
   1. People Afloat. 16 mm, 14 1/2 min., sound, color. Film #321574. Produced by Philips-Petroleum Company, 1962.



INSTRUCTOR OF CANOEING

I. Course
  A. Number: (varies with institution)
  B. Title: Instructor of Canoeing
  C. Credits: 2 semester or 3 quarter (suggested)
  D. Term(s) offered: when demand justifies need
  E. Course description: Skills, theory, methods and materials in basic and advanced canoeing
  F. Prerequisites
    1. Health consistent with energy required in strenuous activity
    2. Survival swimming skills as required by the American National Red Cross for its Small Craft Instructor Courses
    3. Good swimming skills (desirable, although not necessary for course enrollment and completion)
    4. Basic canoeing skills
    5. 18 years of age
    6. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

II. Objectives
  A. General objectives
    1. Achieve proficiency in handling of canoe, tandem and solo, in all environmental and weather conditions
    2. Learn terminology of canoeing
    3. Learn selection, maintenance and management of necessary equipment
    4. Learn to operate and maintain a waterfront facility
    5. Learn federal and state regulations regarding operation and safety and rules of etiquette and safe boating
    6. Learn first aid, safety and rescue techniques
    7. Participate in competitive events as competitor, coach and official
    8. Learn principles of movement relating to canoeing
    9. Obtain teaching and resource materials for canoeing
    10. Practice methods presented and organization of class for instruction
    11. Learn self-reliance and value of cooperation in use of canoe for pleasure and sport
  B. Specific objectives
    1. Successfully complete each area listed under Course Content
    2. Perform skills sequentially

III. Course Content
  A. Basic canoeing skills and knowledge
    1. Language and lore of canoeing
    2. Personal safety and rescue skills
      a. Background information
        1) Preventive maintenance
        2) Canoeing accessories
        3) Buoyancy check
        4) Loading and weight distribution
        5) Capsizing and swamping procedures
      b. Launching and landing
        1) Lifting
        2) Turning
        3) Carrying
      c. Tandem paddling position
      d. Boarding and debarking
      e. Exchanging positions
      f. Stability
      g. Hand paddling
      h. Leaving and re-entering canoe in deep water
      i. Re-entering a swamped canoe

j. Capsized canoe
k. Emptying canoe in shallow water
l. Rescue of swamped canoe
m. Rescue of tired swimmer
n. Artificial respiration
3. Selection of equipment
a. Types of canoes
b. Limitations of canoes
c. Canoes
1) Kinds
2) Parts
3) Sizes
4) Models
5) Care
6) Storage
d. Paddles
1) Kinds
2) Parts
3) Length
4) Wood
5) Care
e. Accessory equipment
4. Basic tandem and solo lifts and carries
5. Strokes
a. Basic tandem strokes
1) Bow
2) Hold
3) Backwater
4) Sweep, reverse sweep, quarter-sweep, reverse quarter-sweep
5) J
b. Additional tandem strokes
1) Draw
2) Pushover
3) Scull and reverse scull
4) Rudders--bow and cross bow
6. Landings
7. Solo paddling positions
8. Adaptations of strokes to solo paddling
9. Adverse wind and weather conditions
a. Current
b. Waves
c. Wind
10. Double bladed paddling

        11. Distance paddling
        12. Recreation activities
    B. Advanced canoeing skills and knowledge
        1.. Tandem and solo stroke improvement under varying wind and weather conditions
        2. Solo strokes and landings
        3. Wae canoe
        4. Poling
        5. White water
            a. Wind
            b. Current
            c. Waves
            d. Bow paddling
            e. Stern paddling
        6. Canoe racing
        7. Kayaking
        8. Canoe adaptations
            a. Sailing
            b. Rowing
            c. Outboarding
        9. Recreation activities (gunwaling)
        10. Emergency repairs
            a. Torn canvas with leak or fiberglass crack with leak
            b. Split paddle blade
            c. Broken paddle shaft
        11. Canoe trips
            a. Planning
            b. Personnel
            c. Maps
            d. Clothing
            e. Food
            f. Loading duffle
            g. Care of equipment
            h. Health
            i. Campcraft
            j. Campsites
            k. Portaging
    C. Teaching methods
        1. Refer to page 71 under Instructor of Sailing

IV. Procedures and methods
    A. Evaluation of student
        1. Knowledge
        2. Canoeing skills

    3. Overall attitude
    4. Ability to supervise students safely in a variety of outdoor environments
  B. Assignments based on
    1. Existing equipment
    2. Facility
    3. Weather elements
    4. Discretion of instructor

V. Bibliography
  A. Books
    1. American Canoeing Association. *Racing Rules for Paddling.* Philadelphia: ACA, n. d.
    2. American National Red Cross. *Basic Canoeing.* Washington, D. C.: ARC, 1965.
    3. __________. *Canoeing.* Garden City, N. Y.: Doubleday, 1956.
    4. Boy Scouts of America. *Canoeing.* Merit Badge Series. New Brunswick, N. J.: BSA, 1968.
    5. Elveldt, Ruth. *Canoeing A-Z.* Minneapolis: Burgess Publishing Co., 1964.
    6. Granek, Istvan. *Paddling Kayaks and Canoes.* Elizabeth, N. J.: Robin Printing Co., n. d.
    7. Kissner, J. *Folbot Holidays.* Charleston, S. C.: Folbot Corp., n. d.
    8. Maken, James. *Maken's Guide to U. S. Canoe Trails.* Irving, Tex.: LeVoyageur Publishing Co., 1971.
    9. McNair, Robert E. *Basic River Canoeing.* Martinsville, Ind.: American Camping Association, 1969.
    10. New England Camping Association. *Canoeing Standards and Graded Classifications.* Somersworth, N. H.: Somersworth Free Press, 1958.
    11. Pulling, Pierre. *Principles of Canoeing.* New York: MacMillan, 1954.
    12. Rethmel, R. C. *Backpacking.* Rev. ed. Minneapolis: Burgess Publishing Co., 1972.
    13. Riviere, Bill. *Pole, Paddle and Portage.* New York: Van Nostrand, Reinhold Co., 1969.
    14. Urban, John T. *A White Water Handbook for Canoe and Kayak.* Boston: Appalachian Mountain Club, 1965.
  B. Resource organizations
    1. American Camping Association, Bradford Woods, Martinsville, Ind. 46151

2. American Canoeing Association, 1217 Spring Garden St., Philadelphia, Pa. 12123
3. American National Red Cross, 18th and E Sts., N.W., Washington, D.C. 20006
4. Appalachian Mountain Club, 5 Joy St., Boston, Mass. 02100.
5. Boy Scouts of America, New Brunswick, N.J. 08902

C. Film

1. White Water. 16 mm, 10 1/2 min., sound, color. Film #321596. Produced by Cinema Verite, 1970.

Instructor of Competitive Swimming

JOHN L. CRAMER, associate professor and director of physical education, recreation and athletics, University of San Diego, California

ROBERT MOWERSON (chairman), associate professor and swimming coach, University of Minnesota, Minneapolis

NANCY O'CONNOR, assistant professor, Colorado State University, Fort Collins

JOHN SPANNUTH, aquatics administrator, Amateur Athletic Union, Indianapolis, Indiana

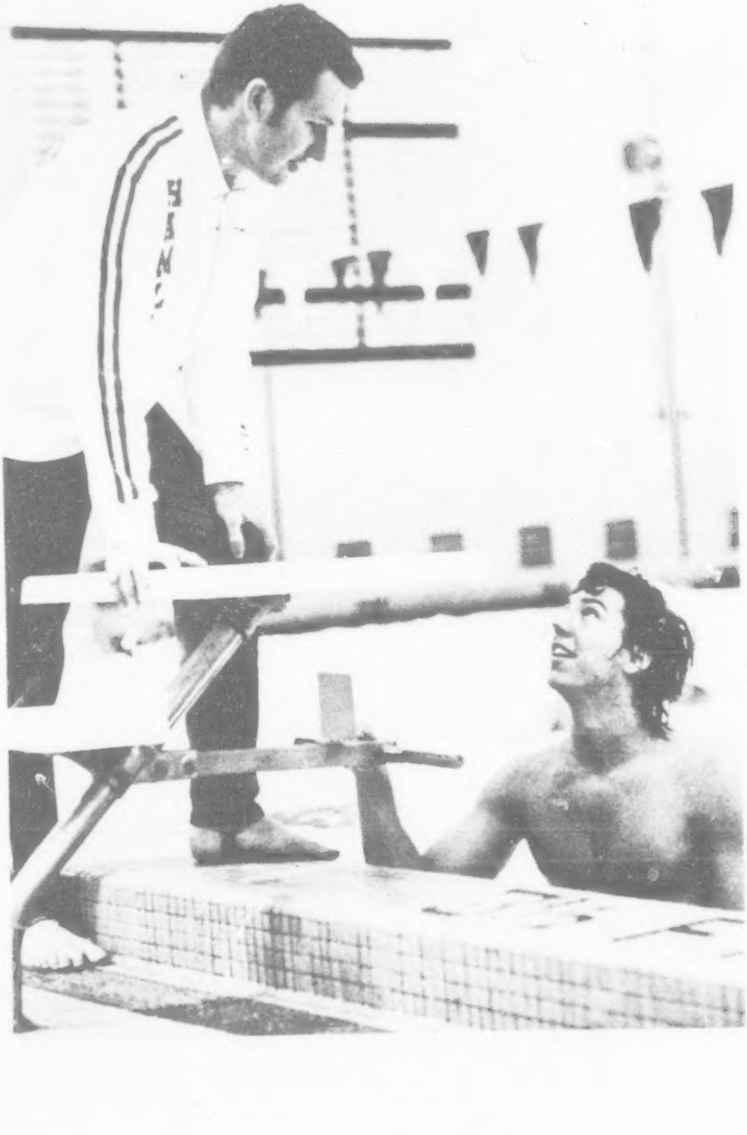
- I. Course
  - A. Number: (varies with institution)
  - B. Title: Theory of Coaching Competitive Swimming
  - C. Credits: 3 semester or 4 quarter (suggested)
  - D. Term(s) offered: when demand justifies need
  - E. Course description: Scientific principles and techniques of coaching swimming and organization and administration of competition
  - F. Prerequisites
    - 1. Courses
      - a. Advanced first aid
      - b. Anatomy
      - c. Kinesiology or mechanics of movement
      - d. Motor learning
      - e. Water Safety Instructor minimum (or equivalent)
    - 2. Personal skill and experience
      - a. Competitive experience or adequate performance of basic competitive strokes and skills

- b. Use of audiovisual equipment
- 3. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

- II. Objectives
  - A. General objective
    - 1. Gain knowledges, understandings and minimal physical skills to enter coaching field
  - B. Specific objectives
    - 1. Appreciate purposes and objectives of competitive swimming
    - 2. Comprehend knowledges, duties and attributes of successful swimming coach
    - 3. Understand and apply as a coach the skill mechanics of competitive swimming
    - 4. Understand concepts and techniques of conditioning swimmers
    - 5. Understand basic principles involved in structuring and conducting practice sessions
    - 6. Understand and interpret NCAA, AAU, and interscholastic rules and regulations
    - 7. Organize and administer swimming competition

- III. Course Content
  - A. Introduction to purposes and objectives of competitive swimming
  - B. The coach
    - 1. Knowledges and skills required
    - 2. Desirable attributes
    - 3. Types of coaching positions
    - 4. First season as a swimming coach
  - C. Desirable attributes of the competitive swimmer
  - D. Skill mechanics of swimming
    - 1. Physical laws applied to swimming
      - a. Buoyancy
      - b. Gravity
      - c. Resistances
        - 1) Frontal
        - 2) Laminar
        - 3) Eddying
        - 4) Cavitation
      - d. Action-reaction
      - e. Conservation of angular momentum
      - f. Transfer of momentum

2. Analysis of stroke
    a. Crawl
        1) Kick
            a) Flutter
            b) Two beat cross over
            c) Twin tail
            d) Two beat drag
            e) Others
        2) Stroke
            a) Entry
            b) Catch
            c) Press
            d) Push
            e) Release
            f) Recovery
            g) Opposite action
            h) Catch up
            i) Fingers open or closed
        3) Breathing
            a) Exhaling (mouth primarily)
            b) Inhaling (mouth entirely)
            c) Breathing patterns
                (i) Sprinting
                (ii) Distance and middle distance
            d) Timing
        4) Body position
            a) Head position
            b) Alignment of trunk and legs
            c) Shoulder roll
            d) Others
    b. Butterfly
        1) Kick
            a) Two beat
            b) One beat
        2) Stroke
            a) Hand entry
            b) Catch
            c) Press
            d) Push
            e) Release
            f) Recovery
        3) Breathing
            a) Orthodox
            b) Rotary
            c) Patterns



    4) Timing the kick stroke and breathing
    5) Body position
  c. Breaststroke
    1) Kick
      a) Whip kick
      b) Orthodox
      c) Others
    2) Stroke
      a) Catch
      b) Press
      c) Scull
      d) Recovery
    3) Breathing
      a) Timing with stroke (early or late)
      b) Patterns
    4) Timing kick, stroke, and breathing
  d. Back crawl
    1) Kick
      a) Flutter
      b) Drag
    2) Stroke
      a) Entry
      b) Catch
      c) Bent arm
      d) Straight arm
      e) Press
      f) Push
      g) Release
      h) Recovery
      i) Shoulder shrug or roll
      j) Opposite action
    3) Body position
      a) Head position
      b) Hip position
      c) Leg position
    4) Breathing
  e. Individual medley
3. Analysis of starting techniques
  a. Forward start
    1) Crawl and butterfly
    2) Breaststroke
    3) Hand and arm position
      a) Forward
      b) Back
      c) Grab

b. Backstroke start
1) Vertical arm throw
2) Horizontal arm throw
c. Differences between A. A. U. and collegiate starts
4. Analysis of turning techniques
a. Crawl (free style)
1) Open turns
2) Tumble turns
3) Others
b. Breast and butterfly
1) N. C. A. A. and interscholastic
2) A. A. U. and international
c. Backstroke
1) Open turns
2) Tumble turns
3) Cross over turns
5. Race strategies
a. Get early lead
b. Sprint at end
c. Sprint in middle
d. Others
E. Physiological aspects of coaching
1. Skeletal muscle
a. Makeup
b. Kinds
c. Tone
2. Muscle training
a. Strength
b. Endurance
3. Nerve control of muscles
a. Reaction time
b. Effect of excitement, cheering, music, etc.
4. Fuel for muscular work
a. Protein
b. Fat
c. Sugar
5. Role of oxygen in physical activity
a. Demand
b. Oxygen debt
c. Recovery
d. Attitude
e. Second wind
6. Energy costs of swimming

    7. Blood composition and transportation of gases
        a. Red and white blood corpuscles
        b. Transport of oxygen
        c. Transport of carbon dioxide
        d. Lactic acid
        e. Buffers
    8. Heart
        a. Cardiac output
        b. Pulse rate and stroke volume
        c. Effect of training
    9. Pulse
        a. Rates
        b. Counting
        c. Return to normal
    10. Effect of training on blood pressure
    11. Fatigue and staleness
        a. Types and causes of fatigue
        b. Types of staleness
            1) Mental
            2) Physical
    12. Ergogenics aids and their hazards
F. Conditioning techniques
    1. Early season
        a. Distance work--approximate daily yardage 10,000-15,000
            1) Interval training (short intervals)
            2) Repeat training (many repeats)
            3) Fartlek (fast, slow, kick, pull, change strokes, etc.)
        b. Emphasis on stroke mechanics
        c. Pulse counting
        d. Water polo as a conditioner and change of pace
    2. Mid-season
        a. Distance work--6,000-8,000 yards
            1) Interval training (longer rests)
            2) Repeat training (fewer repeats)
            3) Better quality
        b. Emphasis on conditioning and speed
    3. Championship preparation
        a. Tapering and peaking
        b. Distance work (sharply cut back)
            1) Interval training (long intervals)
            2) Repeat training (few repeats)
            3) High quality
        c. Rest of paramount importance
        d. Differences between tapering distance men, middle-distance men and sprinters

- G. Organization of training sessions
  - 1. Dry land
    - a. Circuit training (modified, etc.)
    - b. Weight work (bar bells, exer-gyms, etc.)
    - c. Isotonic work (shock cords, exer-genie, surgical tubing, etc.)
    - d. Isometric work
    - e. Isokinetic work
    - f. Stretching exercises, individual and paired
    - g. Running
      - 1) Track
      - 2) Stairs
  - 2. Water
    - a. Circle swimming
    - b. Heats
    - c. Locomotives
    - d. Pace work
    - e. Restricted breathing
    - f. Relays
    - g. In-and-outs
    - h. Walk-backs
  - 3. Structuring a workout
    - a. Sprinters
    - b. Strokers
    - c. Distance men
    - d. Specificity of training
  - 4. Pulse counting, including its physiology
  - 5. Motivation and training psychology
    - a. Verbal and material rewards
    - b. Goals and super goals
    - c. Relays of all kinds
    - d. Audio-visual materials
      - 1) Films
      - 2) T. V.
      - 3) Books
      - 4) Posters
      - 5) Bulletin boards
  - 6. Use of stop watch
- H. Diet and nutrition
- I. Organization and administration for competition
  - 1. Rules and regulations (interscholastic, NCAA, AAU, DGWS)
  - 2. Age group
  - 3. High school
  - 4. College

  5. Parents' groups
  6. Newsletters
  7. Financing
  8. Outfitting the team
  9. Acquiring water time
  10. Scheduling
  11. Travel
  12. Preparations for home meets
  13. Preparations for away meets
  14. Meet officials and their duties
  15. Publicity and promotion

J. Competitive aspects of pool facilities
  1. Depth
  2. Overflow system
  3. Inlets
  4. Outlets
  5. Pool markings and targets
  6. Surface lane lines
  7. Location
  8. Size
  9. Shape
  10. Overhead and underwater lighting
  11. P.A. system
  12. Acoustical treatment
  13. Heating and cooking
  14. Storage facilities
  15. Office
  16. Seating
  17. Decks
  18. Drains
  19. Filtering equipment
  20. Disinfecting equipment

IV. Class Procedures and Methods

A. Class meetings
  1. Hours per week (varies with school)
  2. Weeks required (varies with school)
  3. Where
    a. Classroom
    b. Pool
    c. Visits

B. Evaluation of student (may be on a point basis)
  1. Attitude and class participation
  2. Quizzes

3. Notebook on competitive swimming
4. Term paper on area of specific interest in competitive swimming
5. Observation reports
   a. College coach
   b. High school coach
   c. Club coach
6. Skill analysis and correction
7. Final exam
8. Personal swimming skills
9. Assistance with one or more swimming meets

V. Bibliography

A. Books

1. Armbruster, David A. et al. Swimming and Diving. St. Louis: C. V. Mosby Co., 1973.
2. Council for National Cooperation in Aquatics. Swimming Pools -- A Guide to Their Planning, Design, and Operation. Ft. Lauderdale, Fla.: Hoffman Publications, 1970.
3. Counsilman, James. The Science of Swimming. New York: Prentice-Hall, 1968.
4. Kiphuth, R. J. Swimming. New York: Ronald Press, 1942.
5. Mann, M. and Fries, C. Swimming. New York: Prentice-Hall, 1940.
6. The Official Swimming Guide. Phoenix, Ariz.: College Athletics Publishing Service. Published annually.
7. Torney, John A. and Clayton, Robert D. Aquatic Instruction: Coaching and Management. Minneapolis: Burgess Publishing Co., 1970.

B. Periodicals

1. AAU News and Yearbook, Amateur Athletic Union, 3400 W. 86th St., Indianapolis, Ind. 46268.
2. Research Quarterly, AAHPER, 1201 16th St., N.W., Washington, D.C. 20036.
3. Swimming Technique, Albert Schoenfield, ed. Swimming World, 12618 Killion St., North Hollywood, Calif. 91607.
4. Swimming World Magazine, 5507 Laurel Canyon, North Hollywood, Calif. 91607.

C. Films

1. Science of Swimming, Counsilman Co., Inc., RR #12, Box 300, Bloomington, Ind.
   a. Crawl stroke
   b. Backstroke
   c. Breaststroke
   d. Butterfly

2. American Swimmers Films in Cassettes, Swimming World Magazine, 5507 Laurel Canyon, North Hollywood, Calif. 91607.
    a. Free style
    b. Backstroke
    c. Butterfly
    d. Breaststroke
    e. Starts and turns
    f. Elementary backstroke

Instructor of Synchronized Swimming

BEE HALLETT (chairman), assistant professor, Central Michigan University, Mt. Pleasant
FRANCES JONES, vice chairman of AAU synchronized swimming -- college division, Orchard Lake, Michigan
JOYCE LINDEMAN, assistant professor, University of Michigan, Ann Arbor

I. Course
  A. Number: (varies with institution)
  B. Title: Teaching Synchronized Swimming
  C. Credits: 3 semester or 4 quarter (suggested)
  D. Term(s) offered: when demand justifies need
  E. Course description: Study in historical background, aqua data, teaching techniques, performance techniques, choreography and water show production
  F. Prerequisites
    1. Certification as Instructor of Swimming or equivalent
    2. Practical experience in synchronized swimming as a student participant
    3. Working understanding of kinesiology and body movements
    4. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

II. Objectives
  A. General objectives
    1. Meet current demand in field of synchronized swimming
    2. Develop knowledgeable instructors of synchronized swimming
    3. Develop leadership in club organizations and workshops

- B. Specific objective
    - 1. Acquire synchronized swimming skills, knowledges and understandings relative to
        - a. Terminology
        - b. Laws of physics
        - c. Teaching techniques
        - d. Safety
        - e. Perceptual assessment

- III. Course Content
    - A. History
        - 1. Water ballet
        - 2. Synchronized swimming competition
        - 3. Aquatic art festivals
    - B. Aqua data (laws of physics as related to the body in the water)
        - 1. Balance and body positions
            - a. Location of center of gravity and buoyancy
            - b. Muscle groups responsible for balance
        - 2. Weight charts for levers of the body
        - 3. Gravity and buoyancy forces
    - C. Conceptual techniques
        - 1. Analysis of line
        - 2. Adaptation of swimming strokes to music
        - 3. Development of hybrid strokes
        - 4. Movement analysis for propulsion and support
        - 5. Movement analysis in stunt transition
        - 6. Creative transitional movements
            - a. Hybrid stunts
            - b. Arm designs in space
        - 7. Choreography
            - a. Phrasing music and other forms of accompaniment
            - b. Phrasing creative movement
            - c. Patterns and directions
                - 1) Space
                - 2) Dynamics
                - 3) Level
                - 4) Focus
            - d. Deck movements
            - e. Water entries
            - f. Endings to composition
            - g. Taping and editing music selection
        - 8. Conditioning
        - 9. Creative workouts for club activities
        - 10. Synchronized club organization

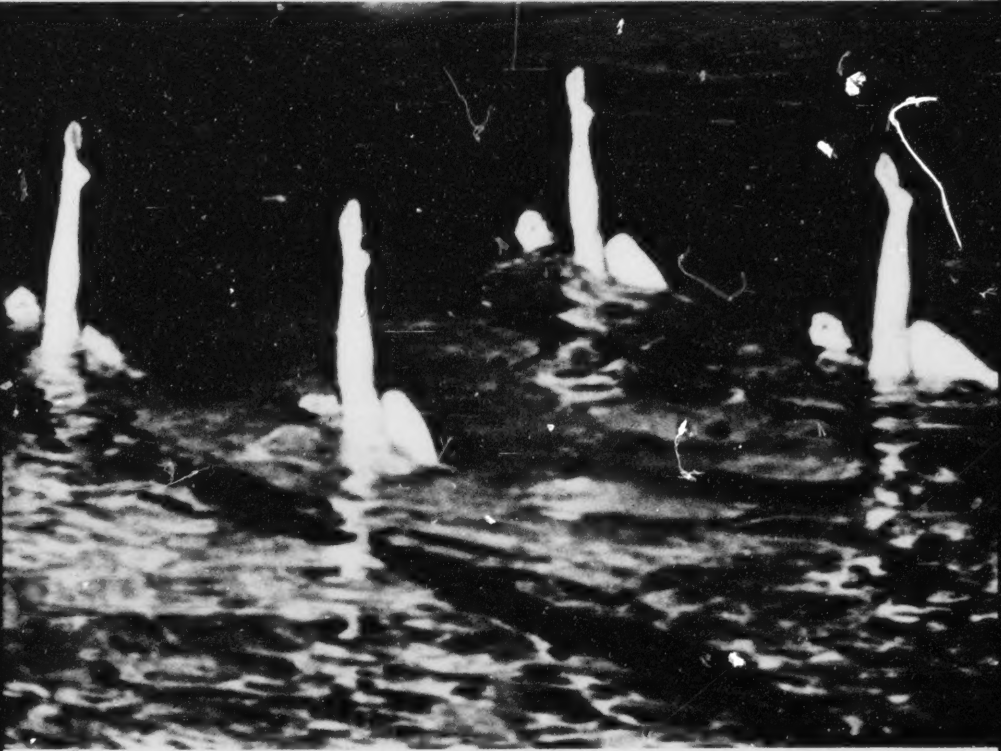
- D. Performing techniques
    - 1. Stroking
    - 2. Support and propulsion sculling
    - 3. Scoops and pulls
    - 4. Basic body positions
    - 5. Breathing and breath holding
    - 6. Eggbeater
    - 7. Floating
    - 8. Movements without stunts
    - 9. Concepts of body movements related to stunt execution
    - 10. Interpretation development
- E. Watershow production
    - 1. Directing a watershow
    - 2. Selecting swimmers
    - 3. Lighting
    - 4. Costumes
    - 5. Sound
    - 6. Staging
        - a. Selecting theme
        - b. Selecting title
        - c. Selecting director
        - d. Scenery
        - e. Props
        - f. Narration
        - g. Rehearsal
        - h. Continuity
    - 7. Make-up
    - 8. Program and arrangement of routines
    - 9. Publicity and tickets
- F. Clinic programming
    - 1. Organization
    - 2. Demonstrations
- G. Facility management
    - 1. Area design
        - a. Bleachers
        - b. Entries and exits
        - c. Location of controls
    - 2. Electrical facilities
        - a. Record player
        - b. Tape recorder
        - c. Microphones
        - d. Underwater speakers
        - e. Spotlights
        - f. Foot and soft overhead lighting

3. Construction or adaptations pertinent to synchronized swimming
   a. Depth
   b. Size
   c. Mirrors
   d. Windows
   e. Underwater lighting and sound
4. Mechanical technology
   a. Visual
      1) Lighting
      2) Videotape
      3) Films
      4) Photos
   b. Auditory
      1) Speakers
      2) Acoustics
      3) Music reproduction
5. Storage
   a. Props
   b. Costumes

H. Synchronized swim meets
   1. Organization
   2. Administration
   3. Officiating

IV. Procedures and Methods
   A. Methods
      1. Lecture
      2. Discussion
      3. Practicum in the water
      4. Films
         a. Movie
         b. Loop film
         c. Slides
      5. Presentations
   B. Requirements
      1. Choreograph and direct a routine for a class or club water show
      2. Swim in a routine (class or club)
      3. Assist with a watershow (class or club) or clinic
      4. Act as a teaching assistant in a synchronized swimming class

C. Evaluation of student
  1. Written tests
  2. Practical performance
  3. Conference
  4. Projects



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A. Books

1. Amateur Athletic Union. Official Synchronized Swimming Handbook. Indianapolis: AAU, 1973.
2. ____________. Your Guide to Fitness. Indianapolis: AAU, 1968.
3. Brown, M. and Sommee, B. Movement Education--Its Evolution and a Modern Approach. Reading, Mass.: Wesley Publishing Co., 1969.
4. Council for National Cooperation in Aquatics. Advanced Aquatic Skills in Synchronized Swimming Activities. Washington, D.C.: CNCA, 1962.
5. Coryell, Helen. Progressive Synchronized Swimming. New York: Association Press, 1972.
6. Gundling, Beulah. The Aquatic Art Book of Watershows. Cedar Rapids, Iowa: International Academy of Aquatic Art, 1964.
7. Price, Ferne. Water Ballet Pageants--Plan-Design-Procedure. Minneapolis: Burgess Publishing Co., 1965.
8. Racham, George. Synchronized Swimming. London: Faber & Faber, 1969.
9. Sherbons, Elizabeth. On the Count of One--A Guide to Movement and Progression in Dance. Palo Alto, Calif.: Nath Press, 1969.
10. Spears, Betty. Fundamentals of Synchronized Swimming. Minneapolis: Burgess Publishing Co., 1966.
11. Vickers, Betty J. Teaching Synchronized Swimming. Englewood Cliffs, N.J.: Prentice-Hall, 1965.
12. Wells, Katharine. Kinesiology--The Scientific Basis of Human Motion. Philadelphia: W. B. Saunders, 1966.

B. Periodicals

1. Aquatic Artist, 206 Iowa Theater Bldg., Cedar Rapids, Iowa 52401.
2. Synchro info, 11902 Red Hill Ave., Santa Ana, Calif. 92705.

C. Loop film

1. Synchronized Swimming Skills and Stunts. Jole Company, San Jose, Calif. 95150

Instructor of Water Polo

ARTHUR D. MINDHEIM (chairman), water polo coach, Indiana University, Bloomington
GREG OLSON, water polo instructor, Indiana University, Bloomington

I. Course
  A. Number: (varies with institution)
  B. Title: Instructor of Water Polo
  C. Credits: 2 semester or 3 quarter (suggested)
  D. Term(s) offered: as enrollments dictate
  E. Course description: Skills of swimming, offense, defense and goal tending, efficient organization of practice, games, and tournaments, and officiating
  F. Prerequisite
    1. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

II. Objectives
  A. General objective
    1. Impart knowledges, understandings and minimal physical skills to be a qualified instructor of water polo
  B. Specific objectives
    1. Master knowledges and understandings in cognitive domain
      a. Terminology
      b. Equipment
      c. Kinesiology
      d. Teaching techniques
        1) General: class organization, group and individual instruction

            - 2) Teaching progressions
            - 3) Coaching techniques
        - e. Safety practices
        - f. Teaching aids
        - g. Rules: NCAA, AAU, FINA
        - h. Available references
        - i. Written examination
        - j. Coaching in practical situation
        - k. Officiating
    - 2. Develop appreciations in affective domain
        - a. Application of knowledge of kinesiology to aquatic situations
        - b. Assessment of individual player attributes
        - c. Communication to individual players
        - d. Appreciation of psychology of individuals in team situation
    - 3. Develop performance skills in motor domain
        - a. Head-up swimming
        - b. Egg beater kick
        - c. Overhead pass/shot
        - d. Push pass-shot
        - e. Pop shot
        - f. Guarding
        - g. Goal tending
        - h. Catching

- III. Course Content
    - A. Rules, regulations, and playing area
    - B. Egg beater kick
    - C. Ball handling
        - 1. Top position
        - 2. Underneath water
        - 3. Walking with ball
        - 4. Turning with ball
    - D. Dribbling
        - 1. Head up
        - 2. Push
        - 3. Head down
    - E. Passing
        - 1. Push
        - 2. Scoop
        - 3. Backhand
        - 4. Hook
        - 5. Layout

F. Shooting
   1. Lob
   2. Pop
   3. Penalty
   4. Push
   5. Sweep
   6. Backhand
   7. Rear back

G. Catching
   1. Dry
   2. Wet

H. Guarding
   1. Ball side guarding
   2. Grab block
   3. Lunge block
   4. Switching
   5. Dropbacks
   6. Cutoffs
   7. Sloughing

I. Team defense
   1. Man to man
   2. Zone
   3. Switching zone

J. Team offense and offensive play
   1. Break ball side
   2. Turning
   3. Figure 8
   4. Fast break offense
   5. Pick
   6. Give and go
   7. Beating the slough
   8. Rotation
   9. Zone offense
   10. Hole man offense
   11. 4-2 offense
   12. Conditioning

K. Teaching and coaching methods

L. Officiating

IV. Procedures and Methods

A. Course methods
   1. Reading assignments and discussion
   2. Lectures
   3. Practical pool work

    4. Conditioning exercises
    5. Use of audio-visual aids
    6. Practical teaching and coaching experience
  B. Evaluation of student
    1. Written exams
    2. Term project
    3. Class participation
    4. Skill exams

V. Bibliography
  A. Books

1. Antilla, W. K. Water Polo Drills and Playing Hints. Palo Alto, Calif.: National Press, 1964.
2. Barr, David. A Guide to Water Polo. New Rochelle, N.Y.: Sportshelf, 1964.
3. Hines, Charles. How to Play and Teach Water Polo. New York: Association Press, 1967.
4. Lambert, Arthur F. and Ganhran, Robert. The Technique of Water Polo. North Hollywood, Calif.: Swimming World, 196[illegible]
5. Rajki, Bela. Water Polo. London: Museum Press, 1958.

Instructor of Lifeguarding

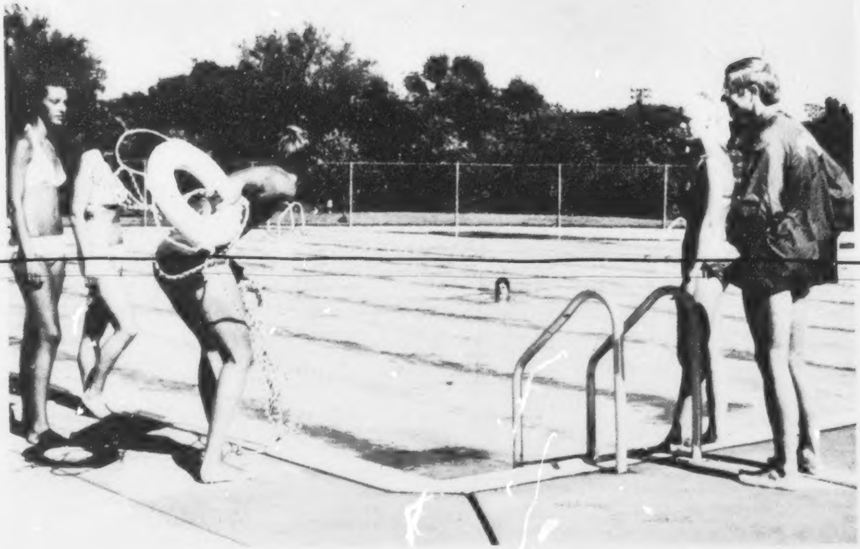
DOUGLAS D'ARNALL, marine safety captain, dept. of harbors and beaches, Huntington Beach, California
LARRY FORSTER, Mars Hill College, Mars Hill, North Carolina
RUTH HULL, assistant professor, University of Wyoming, Laramie
VINCENT MOREHAUSE, director, dept. of harbors, beaches, and development, Huntington Beach, California
LARRY SCRAMLIN, aquatics director, YMCA, Lansing, Michigan
JOHN J. VOWELS, North Hollywood, California
DAVID J. WURZER (chairman), assistant professor, California State University, Long Beach

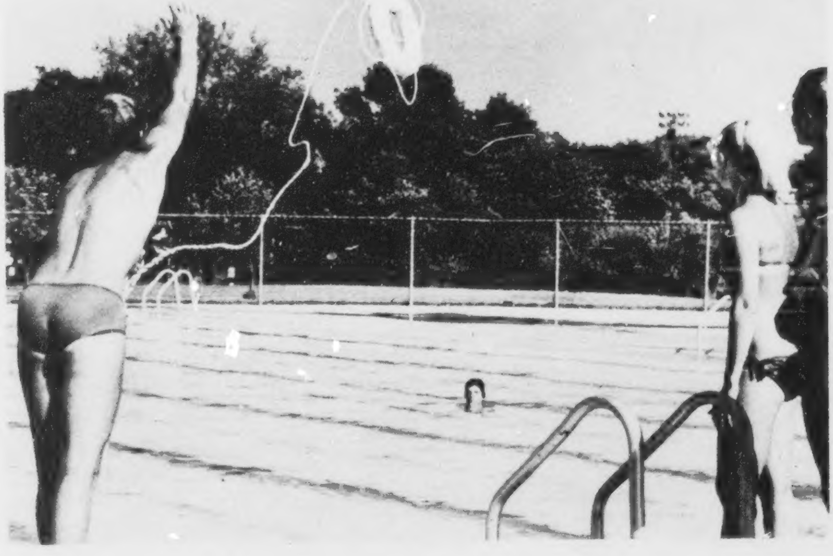
I. Course
  A. Number: (varies with institution)
  B. Title: Instructor of Lifeguarding
  C. Credits: 3 semester or 4 quarter (suggested)
  D. Term(s) offered: when demand justifies need
  E. Course description: Training of qualified instructors to certify lifeguards for work in pools and beaches
  F. Prerequisites
    1. Completion of YMCA lifeguarding course or equivalent
    2. Experience: two years of lifeguarding minimum (recommended at least one season in open water area)
    3. Basic SCUBA certification (LA County, NAUI, PADI, YMCA or equivalent)
    4. Certification in CPR by American Heart Association
    5. Certification in Advanced First Aid by American Red Cross or equivalent
    6. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

- II. Objectives
  - A. General objectives
    - 1. Train an Instructor of Lifeguarding who will apply standardized lifeguarding techniques and procedures in high school, college or university instruction
    - 2. Develop philosophy that lifeguarding is a highly skilled profession
    - 3. Upgrade lifeguarding courses taught in high schools, colleges and universities
    - 4. Certify quality of instructor and course content taught in lifeguarding courses
  - B. Specific objectives to be accomplished by the student
    - 1. Organize and develop an operational chart for a lifeguarding facility
    - 2. Recruit and train personnel for lifeguard positions
    - 3. Understand and promote good public relations with management, staff and public
    - 4. Demonstrate and teach preventive lifeguarding, first aid, body recovery and rescue techniques
    - 5. Analyze and purchase lifeguard equipment
    - 6. Demonstrate and use communications and emergency back-up systems
    - 7. Organize records and reports and analyze data gathered from them
    - 8. Interpret legal ramifications of lifeguarding
    - 9. Understand and use law enforcement procedures
    - 10. Teach all portions of lifeguarding course

- III. Course Content
  - A. Organization and management
    - 1. Organization structure
      - a. Authority for the organization
      - b. Type of organization
    - 2. Chain of command
    - 3. Span of control
      - a. Area of duties
      - b. Supervision of people
    - 4. Objectives and goals
    - 5. Rank classifications
      - a. Management specifications for job
      - b. Definition, tasks, employment standards, knowledge and ability

    6. Table of organization
        a. Minimal operation
        b. Moderate operation
        c. Major operation
        d. Total management operation
        e. Emergency operation
    7. Rules and regulations
        a. Pool
        b. Beach
        c. Surf
        d. Vehicle
        e. Vessel
        f. Ambulance
    8. Uniform regulations
        a. Policy
        b. Uniform
B. Personnel
    1. Recruitment
        a. Job description
        b. Advertisement
    2. Training
        a. Basic lifeguard course
        b. In-service
    3. Performance evaluation
        a. Oral examination
        b. Written examination
        c. Practical examination
C. Public relations
    1. News media
    2. Community safety programs
        a. Age group programs
        b. Community service program
    3. Courtesy and tact
    4. Appearance
D. Preventive lifeguarding
    1. Goal: prevent accidents by
        a. Eliminating hazards
            1) Environmental (natural and unnatural)
            2) Physical
        b. Minimizing hazards or hazardous behavior
    2. Public address announcements
    3. Flag or other signal system





    - 4. Identification of hazards
        - a. Pool, beach, and surf
        - b. Environmental
        - c. Marine life
        - d. Chemical
        - e. Special areas (boating, surfing, etc.)
    - 5. Crowd control
        - a. Artificial barriers
        - b. Back-up systems
    - 6. Signs of "distress"
        - a. Non-swimmer
        - b. Tired or weak swimmer
        - c. Tubes and mats
        - d. Groups
- E. Weather and surf conditions
    - 1. Storms
    - 2. Breakers
    - 3. Generation and dimension of waves
    - 4. Refraction of waves
    - 5. Rip current
    - 6. Backwash
    - 7. Inshore holes
    - 8. Docks, floats, piers, jetties and breakwaters
    - 9. Inlets, harbors and bays
- F. Swimming rescues
    - 1. Bottom push
    - 2. Underarm assist
    - 3. Chin tow
    - 4. Hair tow
    - 5. One man under flat-water condition
    - 6. One man under rough-water condition
    - 7. Two man rescue
    - 8. Human chain rescue
- G. Rescue equipment
    - 1. Poles
    - 2. Ring buoy
    - 3. Rescue tubes and buoys
    - 4. Heaving line
    - 5. Surf boats
    - 6. Paddleboards
    - 7. Binoculars
    - 8. Mask, snorkel and fins
    - 9. Lights
    - 10. Towers
    - 11. Whistles

H. Rescues with equipment
  1. Poles
  2. Heaving line and ring buoy
  3. Rescue tubes and rescue buoy
  4. Carries and lifts
  5. Unconscious victim
  6. Mass rescue
  7. SCUBA rescue
  8. Surfboard and paddleboard rescue
  9. Backboard (neck and spine injury)
  10. Dory or row boat
  11. Canoe or sail boat
  12. Power boat

I. Vehicles and vessels
  1. Boats (jet, power, row and dories)
  2. Vehicles (jeeps, trucks, land rovers, dune buggies)

J. Communications
  1. Communication center
  2. Systems
     a. Telephone and radio
     b. Public address system
     c. Whistle and hand signals
     d. Flag signals
  3. Operational rules

K. Auxiliary services and emergency back-up systems
  1. Equipment (telephone, ambulance, police, light and power, fire-fighting, taxi, doctor, hospital, etc.)
  2. Procedures
     a. Riot
     b. Disaster

L. Advanced first aid and paramedical first aid
  1. Advanced first aid (ARC)
  2. Cardiopulmonary resuscitation (CPR)
  3. Mechanical resuscitators
  4. SCUBA diving injuries
  5. Neck and back injuries
  6. Emergency childbirth

M. Body recovery
  1. Guidelines and techniques
  2. Search and recovery
     a. Circular search pattern
     b. Running "Jack-stay" search pattern
     c. Straight sweep search pattern
     d. U-pattern for lakes, rivers and quarries

- e. River cross search pattern
- f. Bar search pattern

- 3. SCUBA operation
- 4. Equipment (SCUBA and boat)

N. Records and reports
- 1. Guidelines
- 2. Office public relations
- 3. Fiscal procedure
    - a. Financial
    - b. Acquisitions
    - c. Reporting
- 4. Types of reports
- 5. Fundamentals of report writing

O. Legal ramifications
- 1. General rules
- 2. Specific duties and responsibilities
- 3. Special problems
- 4. Federal, state and local laws and ordinances
    - a. Health
    - b. Boating
    - c. Public or private pools and beaches

P. Law enforcement
- 1. Laws of arrest and search and seizure
- 2. Simulation training
    - a. Role playing
    - b. In-service
- 3. Arrest without warrant
- 4. Pool, beach and harbor regulations and ordinances
- 5. Court procedures

IV. Procedures and Methods

A. Practical tests
- 1. Swimming
    - a. 1000-yard swim in 13 minutes
    - b. Run-swim-run
    - c. Rescues
        - 1) Swimming
        - 2) With equipment
- 2. First aid
    - a. Advanced first aid
    - b. CPR
    - c. Resuscitator

- B. Written tests
    - 1. Course content
    - 2. Student's Lifeguard Operational Manual
    - 3. Verification of experience, SCUBA, CPR and first aid
- C. Oral tests
    - 1. Impromptu questions
    - 2. Simulated situations
- D. Practice teaching

V. Bibliography

- A. Books

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Instructor of Aquatics Facilities Management

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I. Course
  A. Number: (varies with institution)
  B. Title: Aquatics Facilities Management
  C. Credits: 3 semester or 4 quarter (suggested)
  D. Term(s) offered: when demand justifies need
  E. Course description: Elements and principles of design and operation of swimming pools, waterfronts and related equipment
  F. Prerequisites
    1. Courses
      a. General chemistry
      b. General physics, including electricity and mechanics
    2. Skills
      a. Aquatic skill ability to insure personal safety in the water
      b. Minimal ability to read architectural drawings desirable
      c. Ability to operate various types of small craft highly desirable
    3. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

II. Objectives
  A. General objective
    1. Develop an aquatics specialist who can work toward solutions to problems in functional design, operation and maintenance of aquatics facilities associated with schools, municipalities and other organizations
  B. Specific objectives
    1. Develop knowledge necessary for critical analysis of swimming pool plans
    2. Encourage original and creative approaches to solving problems of pool facilities layout and efficient operation
    3. Gain knowledge necessary for critical analysis of existing waterfront areas
    4. Develop skill in designing outdoor areas for best utilization and adaptation of natural features
    5. Gain understanding of principles of swimming pool filters
    6. Develop skill in calculation of swimming pool filter operation factors
    7. Gain knowledge of chemical factors affecting pool sanitation and swimmer comfort
    8. Develop skill in achieving and maintaining chemical balance for efficient swimming pool operation
    9. Gain knowledge of principles of major pool equipment operation
    10. Recognize which symptoms of malfunction may be corrected by operator and which need attention of professional technicians
    11. Gain knowledge of efficient use of available waterfront facilities
    12. Apply knowledge to operation of safe and effective aquatics program at outdoor facility

III. Course Content
  A. Swimming pool functional design
    1. Principles
      a. Efficiency of use
      b. Comfort and enjoyment
      c. Absence of health and safety hazards
      d. Quality material for durability
    2. Geographical location
    3. Type of structure
      a. Enclosed
      b. Open
      c. Size
      d. Shape

4. Design elements related to usage
    a. Swimmers in various aquatics programs and their needs
        1) Entries and traffic flow to locker rooms and pool
        2) Locker room layouts
            a) Entry
            b) Check stations
            c) Locker placements
            d) Grooming and comfort stations
            e) Showers
            f) Traffic flow
            g) Dressing rooms
            h) Sauna
            i) Other
        3) Deck areas
            a) Amount and type of area
            b) Type of deck
            c) Deck markings
            d) Spacing around equipment
            e) Drainage
        4) Adjacent deck areas
            a) Swimmer seating
            b) Cuspidors
            c) Bulletin boards
            d) Timing devices
            e) Scoreboards
            f) Wall surfaces
            g) Sound
            h) Electricity
            i) Safety device placement
        5) Anchorage placement for various equipment
        6) Auxiliary areas
            a) Classrooms
            b) Training rooms
            c) Storage areas related to instruction or competition
            d) Others
        7) Water containment areas
            a) Size, shape, depth and number of units
            b) Side, bottom and overflow type and characteristics
            c) Entrances and exits
            d) Markings for water areas
            e) Sound

        - f) Underwater viewing areas for safety, learning and research; access to such areas
        - g) Lighting
        - h) Complementary equipment placement and characteristics
- b. Teaching and supervisory staff areas
    - 1) Locker area
    - 2) Administrative office area
    - 3) First aid area
    - 4) Safety stations
    - 5) Traffic flow, entrances and exits
- c. Operational and maintenance areas
    - 1) Maintenance and storage areas
    - 2) Placement of operational and maintenance mechanical equipment
        - a) Heating
        - b) Electrical
        - c) Sound
        - d) Air conditioning
        - e) Chlorination
        - f) Filtration
    - 3) Entrances and exits
    - 4) Air conditioning and lighting
- d. Spectator areas
    - 1) Entrances and exits
    - 2) Traffic flow
    - 3) Seating
    - 4) Sight lines
    - 5) Sound equipment
    - 6) Ventilation and air conditioning
    - 7) Lighting
    - 8) Comfort stations

5. Design elements related to color scheme
    - a. Basic paint color and trim
    - b. Tile color selection
        - 1) Decks
        - 2) Walls
        - 3) Water containment areas
6. Design elements related to health and safety
    - a. Type of deck and drainage
    - b. Placement of communication units for contacting health and safety personnel
    - c. Placement of supervisory life-saving stations
    - d. Placement and storage of life-saving equipment

        - e. Entries and exits to water containment areas
        - f. Placement and storage of first aid equipment
        - g. Special markings in water containment areas
        - h. Special lighting
        - i. Electrical equipment
- B. Outdoor waterfront facilities
    - 1. Geographical location and environmental characteristics
        - a. Shoreline
        - b. Water movement patterns
        - c. Size of waterfront areas
        - d. Bottom characteristics
        - e. Area adjacent to shoreline
        - f. Entrance and exit potential
        - g. Prevailing winds
    - 2. Usage of facility
        - a. Swimmers in various programs and their needs
            - 1) Locker rooms, showers, comfort stations and other layouts
            - 2) Entrances and exits to dressing facilities
            - 3) Entrances and exits to swimming areas
            - 4) Beach areas adjacent to water
            - 5) Sub-surface bottom characteristics
            - 6) Water movement characteristics
            - 7) Swimming dock facilities
            - 8) Safety and first aid units for piers or beach
            - 9) Sound and lighting for swimming areas
            - 10) Check stations
            - 11) Bulletin boards and information signs
            - 12) Fringe area markers
            - 13) Communication station
        - b. Teaching and supervisory staff areas
            - 1) Locker area
            - 2) Administrative office area
            - 3) First aid area
            - 4) Safety stations
            - 5) Entrances and exits
            - 6) Communication station
        - c. Operation and maintenance areas
            - 1) Maintenance and storage areas
            - 2) Access to maintenance and storage areas
            - 3) Communication station
        - d. Watercraft areas
            - 1) Docking and anchorage
            - 2) Access to and exits from

        3) Servicing and repair units
        4) Instructional areas and sound control
        5) Rescue craft station
        6) First aid station
        7) Communication for aid station

C. Swimming pool filtration
  1. General concepts, circulation
  2. Sand filters
    a. Rapid flow sand and gravel
    b. High rate sand
  3. Diatomaceous earth filters
    a. Pressure type
    b. Open vacuum type
  4. Other types of filters
    a. Cartridge
    b. Gravity sand
  5. Mathematics involved in pool operation calculations
    a. Filter sizing
    b. Circulation flow rates
    c. Pool water capacity
    d. Pump curves
    e. Maximum swimmer loads
  6. Pool record keeping and operational data and statistics

D. Swimming pool chemistry
  1. Water chemistry
    a. Acid-base chemistry
    b. Alkalinity-hardness chemistry
    c. Chemistry of chlorination of water
      1) Liquid chlorine
      2) Hypochlorites
      3) Chlorinated cyanurates
    d. Chemistry of other pool bactericides
      1) Bromine
      2) Iodine
      3) Others
    e. Chemical tests and measurements
      1) Tests for residual bactericide
      2) Tests for pH
      3) Tests for alkalinity and hardness
      4) Tests for cyanuric acid
      5) Tests for bacteria
    f. Flocculents, algaecides and other pool chemicals
  2. Sanitation of decks, floors and bathhouse areas

E. Operation and maintenance of major pool equipment
  1. Circulation pumps
  2. Electrical motors
  3. Pool bottom cleaners
    a. Built-in vacuum cleaners
    b. Portable vacuum cleaner pumps
    c. Self-propelled vacuum cleaners
    d. Hydraulic agitation cleaners
  4. Hydraulic system valves
    a. Manually operated
    b. Pneumatically controlled
  5. Chemical feeders
    a. Solution
    b. Dry
  6. Water heaters
    a. Steam heat exchangers
    b. Gas-fired heaters
  7. Flow meters
    a. Manometers
    b. Variable orifice meters
  8. Pressure gauges
  9. Underwater lighting systems
  10. Underwater sound systems
  11. SCUBA compressors
  12. Air and humidity control systems
  13. Miscellaneous pool and deck equipment
    a. Diving boards and stands
    b. Competitive swimming equipment
    c. Guard stands, ladders, safety equipment
    d. Public address systems
  14. Seasonal pool care
F. Waterfront operation
  1. Major waterfront equipment maintenance
    a. Dock and float systems: materials, construction, maintenance, safety inspections, painting, repair
      1) Docks supported by piles or legs
      2) Hollow drum float docks
      3) Foam billet float docks
      4) Log booms, cribs, dams
    b. Safety equipment: materials, construction, types, maintenance, storage
      1) Lifeguard surfboards
      2) Lifeguard boats
      3) Ring-buoys

        - 4) Other rescue equipment: reaching poles, rescue tubes, etc.
        - 5) Resuscitators
    - c. Sanitation: types, features, cleaning and sanitation procedures
        - 1) Bathhouses
        - 2) Showers and toilet facilities
- 2. Seasonal problems
    - a. Opening and closing the waterfront for the season
        - 1) Portable equipment: procedures for preparing boats, surfboards, poles, ring buoys, marker lines, buoys, etc., for seasonal use or for storage
        - 2) Semi-permanent equipment: procedures for preparing floating docks, cribs, temporary log booms, temporary dams, etc., for seasonal use or for storage
    - b. Off-season storage of equipment
        - 1) Storage of semi-permanent equipment: docks, floats, cribs, booms, dams
        - 2) Storage of portable items: safety equipment, mechanical devices, electrical machinery, etc.
- 3. Smallcraft maintenance
    - a. Sailcraft
        - 1) Docking systems and heavy weather provision
        - 2) Facilities for maintenance and storage of sails
        - 3) Facilities for maintenance and storage of masts, booms, tackle, lines, etc.
        - 4) Facilities for maintenance and storage of hulls
    - b. Canoes
        - 1) Docking systems and heavy weather provision
        - 2) Facilities for maintenance and storage (racks, roofs, special tools)
    - c. Rowboats
        - 1) Docking systems and heavy weather provision
        - 2) Facilities for maintenance and storage (racks, shelters, special tools, hoists)
        - 3) Facilities for repair and storage of oars, life vests and other tackle
    - d. Motorboats
        - 1) Docking systems and heavy weather provision
        - 2) Facilities for maintenance and storage of hulls: boat houses, hoists, trailers, etc.
        - 3) Facilities for maintenance and storage of motors and engines: machine shop, special tools, etc.

4. SCUBA diving equipment
   a. Equipment for marking diving areas
      1) Maintenance and storage
      2) Heavy weather provision
   b. Facilities for maintenance and storage of SCUBA equipment
      1) Compressed air breathing tanks(special safety procedures)
      2) Regulators
      3) Masks, fins, snorkels, weight belts, life vests, wetsuits and other diving gear
      4) Air compressors and tank filling stations
         a) Types of compressors
         b) Special safety procedures
5. Water skiing--facilities for storage and maintenance of skis, ropes, ski belts
6. Surfing--facilities for storage and repair of boards
7. Surf lifeguarding
   a. Garages for vehicles
      1) Dune buggies, jeeps, etc.
      2) Ambulances and rescue trucks
   b. First aid station facilities
      1) First aid room
      2) Storage and repair facilities for beds, stretchers
      3) Storage and maintenance facilities for first aid kits, racks and mountings for kits, splint sets, resuscitators
   c. Storage and repair facilities for lifeguard stands, lifelines, buoys, torpedo buoys, lifeboats, etc.
8. Fishing--facilities for storage and repair of fishing poles, rods, reels, tackle, tackle boxes, bail pails, etc.

IV. Procedures and Methods
   A. Requirements
      1. Acquire specified texts
      2. Develop a notebook covering all aspects of the course
      3. Conduct a research survey on some aspect of facility design or operation
      4. Participate in field trips to inspect various local aquatics facilities and their operation and report on observations
      5. Design a pool complex or waterfront for a specific purpose
   B. Procedure
      1. Lectures
      2. Poolside demonstrations

        3. Projected pictures and drawings of typical and unique aquatics facilities
        4. Field trips to school and municipal pools and to camp and beach waterfront facilities
        5. Sharing of information compiled by student surveys, reports and facilities designs
    C. Evaluation of student
        1. Periodic written quizzes
        2. Written final exam
        3. Term paper
        4. Notebook
        5. Research project
        6. Facilities designs showing adherence to sound principles and original thought

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B. Articles
  1. Beaches made tidy mechanically. Park Practice GRIST 9:29, July/Aug., 1965.
  2. Bimonthly check list for maintenance and operation. Park Practice GRIST 6, inserts 1-4, Jan.-Oct., 1962.
  3. Boat launching mats. Park Practice GRIST 9:29, July/Aug., 1965.
  4. Ramp lift for small boats. National Park Service Plowback, Nov. 1963.

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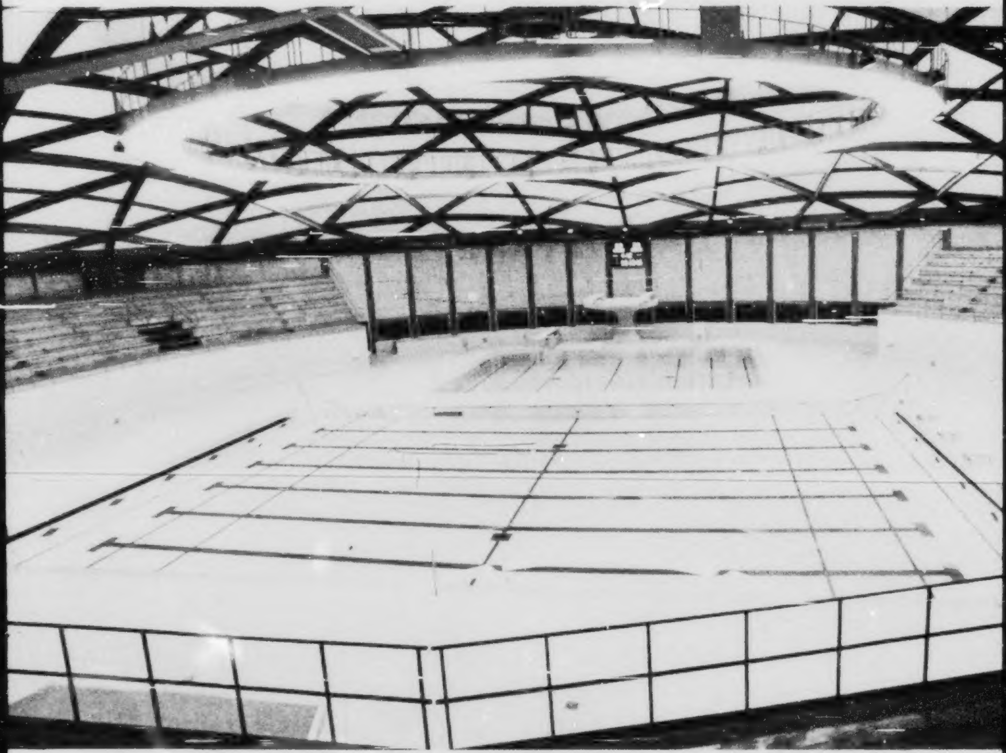
  2. Purchasing Digest, Peter J. Sheridan, ed. Industrial Publishing Co., 614 Superior W., Cleveland, Ohio 44113 (monthly).
  3. Skin Diver Magazine, Petersen Publishing Co., 8490 Sunset Blvd., Los Angeles, Calif. 90069.
  4. Swimming Pool Data and Reference Manual, Hoffman Publishing Co., Ft. Lauderdale, Fla. (annual).
  5. Underwater Magazine, Phil Holt, ed. P. O. Box 212, Arlington, Mass. 02174.

D. Sources of information
  1. American Institute of Park Executives, Inc., Oglebay Park, Wheeling, W. Va. 26003
  2. American National Red Cross, 18th & E Sts., N. W., Washington, D. C. 20006
  3. Outboard Boating Club of America, 333 N. Michigan Ave., Chicago, Ill. 60601
  4. Park Practice Program, 901 Union Trust Bldg., Washington, D. C. 20005
  5. Yachting Publishing Corporation, 205 E. 42nd St., New York, N. Y. 10017



Ball State University Swimming Pool.

PROFESSIONAL STANDARDS FOR THE AQUATICS SPECIALIST

An aquatics specialist is a person who meets the following qualifications:

> Possesses a basic appreciation of each of the 10 areas enumerated for aquatics instructors (pages 15-129)
>
> Meets the standards established for at least three of the aquatics instructor areas

PROFESSIONAL STANDARDS FOR THE AQUATICS ADMINISTRATOR

Professional Standards for the Aquatics Administrator

CHARLES ARNOLD, swimming coach, Madison College, Harrisonburg, Virginia
WILLIAM CAMPBELL, aquatics director, University of Maryland, College Park
WALTER SCHWANK, chairman of school of HPER, University of Montana, Missoula
FRED A. STETSON (chairman), assistant professor and aquatics director, University of Montana, Missoula

I. Course
   A. Number: (varies with institution)
   B. Title: Administration of Aquatics
   C. Credits: 3 semester or 4 quarter (suggested)
   D. Term(s) offered: when demand justifies need
   E. Course description: Develops an awareness of comprehensive aquatics programs and how to implement and coordinate their many facets
   F. Prerequisites
      1. Aptitude for graduate work which meets the institutional requirements (for program placed on graduate level)
      2. Minor in Physical Education or its equivalent
      3. Personal qualifications essential to successful leadership and administration
      4. Individual skill development (desirable but not required)
         a. W.S.I., YMCA swimming instructor, or equivalent
         b. Certified specialist in one or more areas
         c. Appreciation of all areas and individual skill experience in at least five of the following ten areas:

        1) Instructor
        2) Handicapped
        3) Small craft
        4) Competition
        5) Skin and SCUBA diving
        6) Synchronized
        7) Lifeguarding
        8) Springboard diving
        9) Water polo
        10) Aquatics facilities
    5. One or two years practical experience as an aquatics specialist, coach or administrator
    6. Satisfaction of professional standards for the aquatics instructor (pages 11-13)

II. Objectives
  A. General objective
    1. Gain knowledges, understandings and minimal organizational skills to be a qualified aquatics administrator
  B. Specific objectives
    1. Master knowledges and understandings in cognitive domain
      a. Terminology
      b. Administrative problems of equipment and supplies
      c. Factors involved in the conduct of aquatics programs (instruction, recreation, competitive elements)
      d. Rules, regulations, practices and procedures of the various governing bodies
      e. Problems related to facilities (indoor, outdoor)
      f. School law and liability
      g. Sound business procedures as related to aquatics administration
    2. Develop appreciations in affective domain
      a. Role of aquatics in education and our society
      b. Staff relationships
      c. Good public relations
      d. Health aspects of aquatics
      e. Psychological and sociological aspects of aquatics
      f. Need for interpretation of research in aquatics

III. Course Content
  A. Knowledges important to the aquatics administrator
    1. Aquatics in education and our society
      a. Historical aspects
      b. Philosophical aspects

    - c. Ethics
    - d. Interrelationships with physical education
2. Sound business procedures for aquatics administration
    - a. Accounting practices
    - b. Budget and finance
    - c. Purchasing policies
    - d. Operational policies
    - e. Fund raising
3. Administrative problems related to equipment and supplies
    - a. Purchasing
    - b. Design
    - c. Renovation
    - d. Maintenance
    - e. Inventory
4. Problems related to facilities (indoor and outdoor)
    - a. Planning
    - b. Construction
    - c. Maintenance
    - d. Multiple use
5. School law and public liability
    - a. Personal liability
    - b. Institutional liability
    - c. Municipal liability
    - d. Proprietary liability
    - e. Transportation
    - f. Insurance
6. Conduct of aquatics events
    - a. Contracts
    - b. Scheduling
    - c. Travel
    - d. Meet management
    - e. Tickets
    - f. Promotion
    - g. Competitions, exhibitions and tournaments
    - h. Spectator control
    - i. Officiating
    - j. Programs
7. Public relations techniques
    - a. Communication media
    - b. Individual and group relationships
    - c. Oral and written communications
    - d. Audio-visual techniques

8. Staff relationships
    a. Professional status
    b. Staff morale
    c. Selection
    d. Promotion
    e. Salary
    f. Tenure (as applicable)
    g. Supervision
    h. Policies
    i. Communications
    j. Coach and/or administrator
    k. In-service training
9. Administrátion of health aspects of aquatics
    a. Medical supervision
    b. First aid
    c. Care of and prevention of injuries
    d. Nutrition
    e. Safety procedures
    f. Conditioning policies
    g. Relationships with health services
    h. Medical insurance
    i. Medical examination
10. Psychological and sociological aspects of aquatics
    a. Effects of individual participation in aquatics programs
    b. Effects of participation as they relate to individual, team, student body and related groups, and community
11. Professional organizations and related certifying agencies (CNCA members)
12. Interpretation of research
    a. Studies in all areas of aquatics
    b. Studies in medical aspects
    c. Studies in administration

B. Practical experience for the aquatics administrator
    1. General internship experience at a beach or pool, relating to administration and involving
        a. Program -- policies and desires of supervising board or chairman, interests and needs of persons to be served, budgets, facilities and equipment, personnel available and required, balance and diversity of facets
        b. Personnel -- competence required, method of hiring, salaries, periodic evaluation of performance, suggestions noted and grievances heard, esprit de corps, praise for good work

c. Organization -- chain of command, duties and responsibilities in each position, clear indication of what is to be done and how, responsibilities delegated autocratically or democratically
d. Public relations -- information dissemination, involvement of community, courteous treatment of patrons
e. Liability -- steps to guard against negligence, bases for charge of negligence, employee responsibilities

2. Possible assignments
   a. A hypothetical schedule, to include instruction, recreation, competition and special events (clinics, shows, etc.)
   b. A hypothetical budget, including both estimated income and projected expenditures
   c. Sample reports (attendance, work performed, water and air tests, etc.)
   d. Hypothetical solutions (power failure, unauthorized persons, refusal to obey rules, accident to patron, etc.)
   e. Summaries of experience in notebook

IV. Procedures and Methods
   A. Course procedures and methods
      1. Lectures
      2. Reading assignments, discussion
      3. Film, video tape
      4. Practical administrative experiences
   B. Evaluation of student
      1. Attendance and class participation
      2. Written examinations
      3. Reports on readings
      4. Critique of internship
      5. Possible projects
         a. Comparative reading assignments
         b. Notebook
         c. Solutions for hypothetical administrative assignments

V. Bibliography
   A. Books

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B. Periodical

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141/142

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